

# COMPUTERWORLD

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**YDT work breaks, ergonomic improvements** would be required under a proposal aimed at San Francisco firms employing more than 15 people. Page 12.

**When Douglas Aircraft's MD-11 jetliner rolls onto the tarmac**, half the company's 1,400 IS staffers will either have been dismissed or reassigned. Page 10.

**Off-season peak** pushes airline reservation systems to the limit as travelers rush to beat deadlines for fall travel bargains. Page 91.

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**Military unit depends on decision support system to orchestrate Middle East airlift.** Page 6.

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**The software leasing market** could be a lucrative niche for computer leasing companies. Page 65.

**RISC benefits on PCs?** Some vendors push add-in boards to provide the performance boost that engineering workstations claim. Page 37.

## Lessors await Summit bounty

*But bargain hunting and IBM Credit Corp. could dash dealers' hopes*

BY NELL MARGOLIS  
and ELLIS BOOKER  
CW STAFF

When IBM announces Summit, its long-awaited next-generation mainframe, the news will send a shiver of joy through the computer leasing industry. At least, that is what leasing executives think.

Those executives say they

expect a twofold harvest: a bumper crop of profits from leases of the new mainframes and the yield of a reinvigorated aftermarket as customers snap up the used systems that Summit supplants.

That aftermarket may not prove to be as lucrative as the lessors think, however, if leasing customers obtain the low-cost deals they anticipate from an in-

creased supply of used equipment. In short, customers anticipate more deals at better prices as a bunch of bruised independent lessors vie for shares of the newly revved-up market (see story page 93).

The Summit debut, said Thomas Donovan, an analyst at Technology Investment Strategies Corp., will do nothing to alter most of the harsh realities that have wreaked havoc on the computer leasing industry.

"There will still be heavy competition, especially from ICC," he said (see story page 93). IBM's leasing subsidiary, IBM Credit Corp., dominates the leasing sector; estimates are that it writes 70% of all new leases of 3090s.

Continued on page 92

### Thar's gold in them thar hills!

While Summit will likely push down prices of older equipment, high-end 3090s still command substantial value

3090 model	First shipped	Current list price	Fair market value (May 1990)
600E	Second quarter, 1987	\$11,896,335	44%
600S	Fourth quarter, 1988	\$13,482,325	55%
600J	Fourth quarter, 1989	\$13,482,325	64%

Source: Technology Investment Strategies Corp.

CW Chart Paul Mack

### Perspective

Times have changed since the 3090 rollout. Page 93.

## Compatible LANs prove to be elusive

BY PATRICIA KEEFE  
and JIM NASH  
CW STAFF

Underwhelmed by incremental enhancements to local-area networking products, users want to know what the leaders in the personal computer network industry are doing to make their systems really work together.

Colleen Brisbane, a systems engineer at General Motors Corp.'s Electronic Data Systems subsidiary, said that is one question she would ask Novell, Inc. and Microsoft Corp.

Brisbane is one of many network managers who are quickly growing impatient with simple linking of LANs and inferior third-party interoperability software. These managers want systems that allow users on one network to actually manage events

on another company's network without having to learn all the intricacies of both.

Mike Butler, automation manager at Palm Beach International Airport in West Palm Beach, Fla., said his department has standardized on 3Com Corp.'s 3+ Open operating sys-

tem because it links the many proprietary airport systems and applications he must support.

Butler explained that he is unwilling to add any other operating systems, no matter what advantages they offer, because of the uncertainty and complexity

Continued on page 8

### DOLLARS & CENTS

## How your salary stacks up

Want to know who makes the most money in information systems? Which industries pay the best? In which cities your paycheck goes the furthest? Those salaries have grown the most?

Computerworld's fourth annual salary survey tabulates the total compensation (salary plus bonuses) for a range of IS positions by company size, region and industry. Some revelations are:

- The difference in total compensation between IS executives in organizations with \$50 million in annual revenue or assets and those with \$500 million is more than \$43,000.

- New York, Boston and Northern California are Nos. 1, 2 and 3, respectively, when it comes to paying their IS chiefs top dollar.

- After adjusting income for the cost of living, IS executives in New York come out ahead.

- Utilities firms making \$500 million or more per year pay their IS executives more money than companies of comparable size in other industries (see chart at right).

- Information center managers' salaries have declined during the last four years, while chief information officer-level pay rose.

The survey results begin on page 57.

## Hard times hit DBMS companies

BY JEAN S. BOZMAN  
CW STAFF

SAN FRANCISCO — The relational database management system industry, a bright spot amid the battered midrange and large-system market of recent years, is showing signs of fatigue. The primary vendors are scrambling to revise plans as profits fail to live up to expectations.

Vendors are quick to fault a slowing domestic economy, but on closer inspection, it appears that at least part of the relational mauling is self-inflicted. On top of their other troubles, RDBMS vendors seem to be scrambling for increasingly scarce sales orders by using heavy discounting.

Chris Kenner, executive vice-president at Ingres Corp., confirmed the trend. "All of us are chasing quarterly sales targets, so you get extremely aggressive discounting on software products," said Kenner, who directs all marketing and sales activity for the company. "It rarely moves the customer decision, but it does create a new low standard of pricing."

It may also have severely damaged the financial reputation of Oracle Systems Corp., which had to restate quarterly revenue

Continued on page 91

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SURVEY

Information Center Managers' Salaries Have Declined During the Last Four Years, While Chief Information Officer-Level Pay Rose.

The survey results begin on page 57.

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## Quotable

**"I need a commitment in my hand by the end of this year that a solution will be found. I just want a plain business solution."**

JOSE BORGES  
SOUTHERN CALIFORNIA GAS

*On the road for links between OS/2 and Novell networks. See story page 8.*

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# EXECUTIVE BRIEFING

■ IBM users who lease mainframes are looking forward to a bonanza of great deals on used 3090s after IBM's Summit announcement later this month. Meanwhile, computer lessors are looking to write plenty of business on the new high-ticket mainframes to shore up their battered profit margins. It will add up to a busy mainframe shopping season this fall, with IBM sales reps cutting deals to make year-end quotas — and new high-end entries from Amdahl and Hitachi Data Systems joining the fray. Pages 1, 92 and 93.

■ Bechtel's veteran IS chief, H. William Howard, is the new vice-president of information technologies at Inland Steel in Chicago. Howard had been with Bechtel for 17 years, including six years as head of IS. Bechtel, the San Francisco-based construction giant, has not yet named Howard's replacement. Page 4.

■ Computerworld's fourth annual salary survey reveals that large utilities pay the most to their IS executives. New York, Boston and Northern California are the highest paying areas for IS talent, and there is a large pay gap nationwide between salaries of IS personnel at large companies and small ones. Page 57.

■ The massive U.S. military buildup in the Middle East is being orchestrated by an extensive decision support system at Illinois-based Scott Air Force Base. A 50-member crisis action team monitors events on a classified local-area network, then uses the Digital Equipment Corp. VAX-based Global Decision Support System to schedule flights, cargo and drop-off points for 1,000 aircraft. Page 6.

■ A discounting war has apparently hit the RDBMS industry, as ever-aggressive rivals such as Oracle and Ingres have turned the heat up a notch. While analysts point to longer buying cycles, the downturn has wrought lower estimated earnings at Oracle, layoffs at Sybase and other troubles for vendors. Page 1.

■ Douglas Aircraft has slashed or reassigned half its IS work force, more than 700 jobs, as part of a staff consolidation to focus on the forthcoming MD-11 commercial jet. The McDonnell Douglas unit will concentrate its efforts on factory-floor automation. Page 10.

■ Mandated work breaks

for VDT users would be required under a law proposed by the county board in San Francisco. If passed, the bill would require VDT users to take 15-minute breaks every two hours. Local employers, including United Airlines and AT&T, have not responded formally, but they say they are concerned about the bill's implications for businesses. Page 12.

■ Corning Asahi Video Products won the Society of Manufacturing Engineers' award for the best use of CIM. Information technology at the firm's State College, Pa., plant preserved one of the last factories in the U.S. making glass for TV tubes. Page 47.

■ On-site this week: Written drivers' tests are a misnomer at the Milledgeville, Ga., Department of Public Safety. License applicants do not use pencils; they take the test on terminals linked to a Bull HN LAN. The electronic system processes more applicants and tabulates results faster than a manual one. Page 38. Dreyer's Grand Ice Cream in Lafayette, Calif., runs its business coolly and smoothly on HP minicomputers. Eschewing mainframes at a \$300 million company was unthinkable 10 years ago, but Dreyer's likes the flexibility and lower costs of the mini computers — and says it sees plenty of upgrade room in the HP family for the future. Page 29. Chicago real estate firm LaSalle Partners is also forsaking the mainframe path and moving applications from a 4341 to PC LANs. Page 41.

**M**ail fraud! Cambridge, Mass.-based Forrester Research is warning users to stop buying electronic mail packages. Citing a study of 50 large corporations, Forrester claims that E-mail has failed to live up to expectations of customers, who'd rather use fax or voice mail. Companies have gotten duped into buying a tangle of incompatible E-mail systems that don't provide even basic communications among their users, with the net result that they're better off just using the telephone, the research firm claims. It seems that poorly hatched buying plans have done what neither rain nor snow nor sleet nor gloom of night could.



Dreyer's Roger Lindquist finds minicomputers a last alternative to the rocky road of mainframes. Page 29.



A hot way to keep system costs in check. Page 63.

# WHEN THE FORTUNE 500 WANT SORTING EFFICIENCY, THEY DON'T WASTE TIME.



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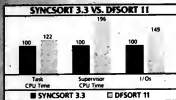
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# Micro chip patent rewrites history

BY MAURA J. HARRINGTON  
CIVIL STAFF

A California engineer staked claim last week to inventing the single-chip microcomputer. But although a patent granted in July was first claimed in 1970 and predates all other microcomputer patents, the stir it made in Silicon Valley is unlikely to be felt soon—*if ever*—by computer users, observers said.

Gilbert Hyatt claimed that the impact of his patent is broad and covers anything that includes a CPU and an input/output device.

However, analysts and patent lawyers agreed that the short-term impact on end users is virtually nil and that red tape in the U.S. Patent Office and court system could tie up the case for years before anything comes of Hyatt's 20-year-old invention.



Hyatt indicated that he would be attempting to gain royalty payments from semiconductor vendors that he said infringe on his patent. "I don't think there's going to be litigation with any other vendors regarding this patent, because the patent is very broad and very strong, and we're ready to go into negotiations with a major electronics corporation on a joint venture for this," he said.

Hyatt received a patent numbered 4,942,516 on July 17, 1990, for his "computer on a chip"—a microcomputer having a CPU, operand memory and read-only memory on one integrated circuit chip. The claim was filed in December 1970 for work dating back to 1968.

"If the patent was valid and infringed and asserted, it could affect all microprocessors made

or developed since the patent was filed," said attorney Gary Hecker, a partner at Los Angeles-based Hecker & Harrison who specializes in patent protection cases of computer hardware and software.

Though he is not directly involved in the Hyatt case, Hecker said that because of the complexity of the case, it is unlikely that end users or chip vendors will be affected by the patent in the near future.

"This was an extraordinary, lengthy and exhausted patent process," Hecker said. "Typically, a filing process would be from two to five years, not 20. So the interpretation, scope and validity of those claims cannot be assessed until this lengthy file can be examined, which I guess will begin fairly



Hyatt expects no royalty troubles

soon and last up to several years."

However, analyst Andrew Seybold in Santa Clara, Calif., and publisher of "The Outlook On Professional Computing," said that even if Hyatt were to receive modest royalties from chip manufacturers, that "would make him a very wealthy man."

While Hyatt said he will have minimal trouble in collecting what he feels are moderate and fair royalties, some analysts disagreed. "Pennies per chip has virtually no impact on the end user, but if I were any of these companies, I'd look at this carefully, and if I thought it was unfair—no matter how small the fee—I'd pursue legal action," Seybold said.

Microcomputer chip manufacturers, most of whom admitted to being taken by surprise by Hyatt's patent award, reacted with caution, saying their lawyers were studying the patents.

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# Bechtel IS chief leaves for Inland Steel

BY JAMES DALY  
CIVIL STAFF

SAN FRANCISCO—H. William Howard, vice-president of information technology at the Bechtel Group, Inc., has packed his bags and headed east to start a new position as vice-president of information technologies at Inland Steel Industries, Inc. in Chicago.

"It's time for new challenges," said Howard, who spent six of his 17 years at Bechtel as head of its IS department. "It's a very good opportunity to do some interesting and different things."

No replacement in Bechtel's systems group has yet been chosen for Howard, who assumed his new position at Inland on Sept. 1.

At Inland, Howard will report to Frank W. Luersen, chairman and chief executive officer of the



IT'S A very good opportunity to do some interesting and different things."

H. WILLIAM HOWARD  
INLAND STEEL

\$4.2 billion firm, and assume responsibility for the corporate-wide information technology needs of the company's 20,000 employees.

Howard, 55, worked his way up the corporate IS ladder at Bechtel. He started as an assistant to the general manager in 1984 and held positions in all facets of the IS organization, including

programming, communications, project management, operations and user support.

Before joining Bechtel, Howard held managerial roles at Memorex Corp. and Systems Industries, Inc. and had earlier positions at IBM and Rogers Engineering Co.

He is a 1956 graduate of Princeton University and a 1962 graduate of Stanford University's Graduate School of Business.

## Microsoft starts help group for systems installer needs

BY JAMES DALY  
CIVIL STAFF

REDMOND, Wash.—Microsoft Corp. extended a helping hand to befuddled systems installers last week with the announcement of the birth of an international consulting group aimed at helping large corporate customers construct complex information systems.

Additionally, the company continued on its bent to provide support options for OS/2 with the introduction of On Call for OS/2, a phone-in technical support service for users of the system.

Microsoft officials said the Information Technology Integration Services group will use a multipronged approach that includes extensive education, planning, design, custom application development and on-site systems support.

ITIS will be headed by Robert L. McDowell, formerly a partner

and national director of strategic business systems at Ernst and Young.

"Customers need more than just a collection of products," McDowell said, adding that ITIS also intends to augment its initial offerings by partnering with a few large systems integrators.

Microsoft Chairman Bill Gates called ITIS "a natural extension" of the firm's expansive computing and connectivity efforts.

Although OEMs will continue to serve on the front line of OS/2 support, the On Call for OS/2 program will offer supplementary assistance for all OEM releases of OS/2, starting with Version 1.2.

However, customers may want to keep an egg timer handy when making a call. The cost of the service, which is available 9 a.m. to 5 p.m. Monday through Friday, will run \$2 per minute. The On Call for OS/2 phone number is (900) 896-9600.

## CORRECTIONS

U.S. District Judge Vaughn Walker did not grant a continuance in the Apple Computer, Inc. copyright suit against Microsoft Corp. and Hewlett-Packard Co. (CW, Aug. 27). A ruling in the case is expected in the near future.

The description of the author of the Aug. 20 Marketplace column was incorrect. The author, James R. Taylor, is vice-president and manager of the User Liaison Group at Sunwa Bank of California.

In the Aug. 20 issue, the product

listing in the Systems and Software section for Data Summary, Inc. included an incomplete phone number. The correct number is (708) 795-0606.

A mainframe data center automation offering from Boole & Babbage, Inc. called Auto Operator, was omitted from the Aug. 27 Product Spotlight chart on console automation. Auto Operator is a family of products. The basic product supports IBM's MVS and DB2. Options are also available for IMS, CICS and Netview. The price range is \$22,500 to \$80,000.

# If DB2 Is The Answer, What The Heck Was The Question?

Beginning to wonder about betting your company's future on DB2?

Wouldn't you like to know how IBM's information management approach will address the major problems and issues you'll face in the 90s?

We think you would. So, we've developed a check-list of what's most important to you.

So you can clearly see what you can expect from IBM.

And what you can expect from us.

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	IMS	✓	✓
	VSAM	✓	✓
	TOTAL	✓	✓
	CA-IDMS	✓	✓
PORTABILITY Runs identically on...	CA-DATACOM	✓	✓
	MVS	✓	✓
	MVS/XA	✓	✓
	MVS/ESA	✓	✓
	VSE	✓	✓
STANDARDS	VM	✓	✓
	PC-DOS	✓	✓
	PC LAN	✓	✓
	ANSI SQL	✓	✓
	FIPS	✓	✓
DISTRIBUTED DATABASE	SAA	✓	✓
	NAS	✓	✓
	Remote Request	✓	✓
	Distributed Request	✓	✓
	Replication	✓	✓
INTEGRATION	Partitioning	✓	✓
	Dictionary	✓	✓
PROVEN: Supports tens of thousands of mission-critical applications	w/Systems Security	✓	✓
		✓	✓

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successful COBOL development environments; application generators; knowledge-based systems and products for project estimation and change management.

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mission-critical applications can run on multiple platforms and operating systems from mainframe to midrange to PC.

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And one that's readily available today.

Which leaves just one question for everyone who's still patiently waiting for IBM...

*What are you waiting for?*



**COMPUTER ASSOCIATES**

## NEWS SHORTS

### Poor sales drive down HP prices

Two weeks after Hewlett-Packard Co. reported a quarterly decrease in profits that industry analysts blamed in part on poor personal computer sales, the vendor dropped its PC price by as much as 24%. This is the second reduction in as many months on two of HP's Vectra computers — the 286/12 and QS/165 — which were reduced by \$400 on Aug. 1. The new price cuts affect 11 models and range from \$300 to \$4,600. According to the investment firm Shearson Lehman Hutton, Inc., HP's PC orders have fallen "significantly" within the past year, particularly in the U.S.

### Killer tornadoes miss data centers

The killer tornadoes that ripped through northeastern Illinois last Tuesday did not harm any data centers, according to disaster-recovery vendors. Neither Rosemont, IL-based Comdisco Disaster Recovery Services, Inc. nor Wayne, Pa.-based Sunbelt Recovery Services, Inc. received alerts or disaster declarations as a result of the storms, which claimed more than 24 lives.

### VM gets LU6.2 support

Hoping to double its market by tapping the 8,000 or so VM sites in the nation looking for remote-to-host and host-to-host networking, Spectrum Concepts, Inc. last week announced a version of its Advanced Program-to-Program Communications/LU6.2 tool for IBM VM environments. Since 1987, Spectrum has marketed MVS and PC-DOS implementations of the communications software. The newest product is called XCOM 6.2 VM.

### First Fidelity signs EDS

With its eye on reduced costs and a chance to move its applications to a single platform, First Fidelity Bancorp. in Lawrenceville, N.J., signed a 10-year contract last week to have Electronic Data Systems Corp. manage its data centers. Under the agreement, EDS will consolidate the bank holding company's data center operations at a single site, offer jobs to current First Fidelity data center personnel and, during the next 18 months, convert First Fidelity's applications systems on a unified platform. However, the bank, which has \$29.8 billion in assets and offices in New Jersey and Pennsylvania, will continue direct management of applications systems maintenance and development.

### Trade panel: Dumping hurts U.S.

The seven small U.S.-based makers of flat-panel display technology that accused major Japanese manufacturers last July of dumping similar screens on the U.S. market finally found a sympathetic ear in Washington, D.C. The International Trade Commission issued a unanimous ruling last week that the domestic market is being injured at the hands of the 12 named overseas suppliers, which include such companies as Hitachi Ltd., Sharp Corp. and Seiko Epson Corp. Action is currently being taken by the U.S. Department of Commerce; its ongoing investigation is expected to yield a ruling before the end of this year.

### Notebook PC from Zeos

Zeos International Ltd., a 9-year-old PC manufacturer based in St. Paul, Minn., introduced its first lightweight PC last week. Based on Intel Corp.'s 80286 microprocessor, the Zeos Notebook computer weighs just under 7 pounds and costs \$1,995 for 1M byte of memory, an IBM Video Graphics Array-bi-color display, a 20M-byte hard disk drive, a 1.44M-byte floppy drive and an 82-key keyboard, a spokesman for the company said. Features include a two-hour battery life and a one-hour "quick charge" recharging time. The battery can also be "bricked-charge" if the PC is plugged in while in use. The Zeos Notebook computer is due out by mid-September and is available directly to end users, the company said.

More news briefs on page 91

## Desert airlift computer-aided

BY GARY H. ANTHERS  
CW STAFF

### SCOTT AIR FORCE BASE, IL.

The U.S. Air Force is using a new computer system to orchestrate the mammoth airlift that has sent 1,150 flights and 75 million pounds of cargo to the Middle East in three weeks.

Within hours of President Bush's order to send forces to stand against Iraq's incursion into Kuwait and potential threat to Saudi Arabia, the Military Airlift Command (MAC) established a crisis action team, now a 50-person group holed up in a special command center here.

The team is using a host of computer tools to plan and monitor the round-the-clock deployment of U.S. troops and goods to Saudi Arabia.

The crisis action team activated an emergency module of MAC's Global Decision Support System (GDSS), a distributed system for planning and monitoring military air shipments.

GDSS provides decision support to military officers responding to external events and requests; it schedules and plans the resulting flights; and it monitors the execution of those plans by Air Force commands around the world.

"GDSS is based on a philosophy of centralized control and decentralized execution," said Maj. Michael McDermid, a MAC officer involved in developing the system.

The crisis team uses a classified local-area network to monitor events in the Middle East and track MAC aircraft. The LAN has gateways into global networks managed by the Defense Communications Agency, linking the command center to most military installations worldwide.



Crisis action team plans deployment of troops to Saudi Arabia

Using the special software module, the team combines information from the Middle East, deployment plans from the U.S. Central Command, requests from operational commands and aircraft status information from the GDSS database and issues general directives — for example, "Send five C-141 transport planes from point A to point B on Sept. 3."

Those directives flow to the heart of GDSS, an unclassified system that puts together schedules and detailed flight plans and monitors their execution in near real-time. GDSS assigns planes from an inventory of 1,000 aircraft, specifies routes, plans en-route stops and aerial refueling and specifies cargo pickup and drop.

"If we didn't have GDSS, we couldn't do command and control [procedures]," McDermid said flatly. "We could never go back to a manual system."

Although GDSS is being used much as it existed before the Persian Gulf emergency, some software modifications have been made. Access to GDSS data, normally available to MAC

personnel only, has been extended to a few military commands elsewhere, McDermid said. Such access is read-only, and MAC has taken pains to establish hardware and software "guards" to prevent access to GDSS by other users on the military networks to which it attaches.

"The GDSS databases reside on Digital Equipment Corp. VAX computers at MAC headquarters and at six other Air Force installations, five in the U.S. and one in West Germany."

The large VAXs are hooked up by arrays of Microvases, which are connected along with smart and dumb terminals in Ethernet-based local-area networks at each location. The seven GDSS sites are linked in a Decnet-based wide-area network via leased lines.

For added survivability, MAC maintains an alternate data path over a subset of the Transmission Control Protocol/Internet Protocol-based Defense Data Network. Terminals with access to the classified network are denied to simplify security concerns.

## Reserve call-up has little impact on IS

BY MAURIA HARRINGTON  
CW STAFF

As U.S. National Guard and Reserve units begin mobilizing for Middle East duty, some information systems managers in the U.S. do not expect much impact on their own staffs.

"Personally, I'm concerned about us being over there. But we don't have anyone in our area that is in the Reserves right now," said Steve Shimato, director of MIS at Van De Kamp, Inc. in Los Angeles.

"If I did have people [enlisted], I wouldn't have any problem with encouraging them to go and supporting them if they did," Shimato added.

"I don't think there is anyone in our division that is within the draft age, so I don't think we will

be affected," said Willie Williams, supervisor of computer operations at Control Data Corp. in Torrance, Calif., who served in the U.S. Army in Germany between 1960 and 1962. He added that he would support anyone willing to serve in the Middle East.

At the Atlanta office of Sears, Roebuck and Co., the office manager for the IS division said no employees have been affected.

"I've thought about the situation, and certainly we'd hold their job for as long as we could if anyone did serve, but virtually there is no one in that situation in our office," said Christine Young, a Sears office manager.

Meanwhile, industry vendors such as Xerox Corp., based in

Stamford, Conn., and Nynex Corp. in White Plains, N.Y., among others, have enhanced their policies for employees involved in the crisis.

At Dun & Bradstreet Software Services in Atlanta, fewer than 1% of the company's employees would be affected by a call, a spokesman said.

IBM said that it has had some employees in the Reserves leave to serve in the Middle East. Last year, IBM reported that 1,263 employees received military leave to serve in the Reserves.

IBM and other industry vendors have agreed to pay the difference between any employee's paycheck and military pay for up to 120 days.

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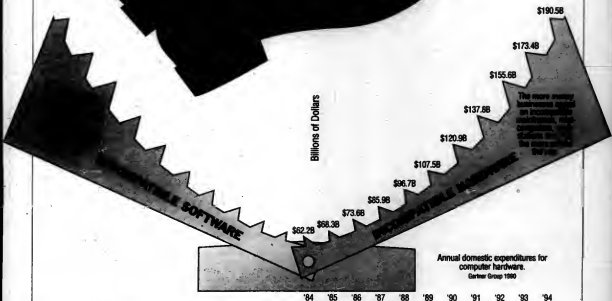
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# Figuring out Token-Ring SNA

BY ELISABETH HORWITT  
CW STAFF

As corporate IBM Token-Ring installations finally approach critical mass, information systems managers face the same corporatewide interconnectivity issues their Ethernet brethren began tackling several years back — but with a wicked SNA twist.

Approximately 25% of all IBM Systems Network Architecture (SNA) mainframe installations now also have IBM Token-Ring, according to Focus Research (see chart). An increasing number of Fortune 500 companies are moving past the initial implementation of a few isolated Token-Rings to "interconnecting and forming a big network and moving all of your traffic over it," said Robin Layland, an engineering consultant at The Travelers Corp. "People with Ethernet have already done

bridges; now Token-Ring and SNA are getting into the act."

"The million-dollar question" is how to come up with a common networking architecture that allows local-area network users to access corporatewide computing resources, whether the computer is a personal computer server on a LAN or an IBM host, according to John Payne, a telecommunications analyst at Charles Schwab & Co.

In their quest for answers to this question, Token-Ring SNA shops are meeting with difficulties that Ethernet managers never had to lose sleep over. "Oh, what a tangled web we weave," one frustrated communications manager moaned.

The major advantage Ethernet installations have over IBM Token-Ring shops is that most major PCs and non-IBM hosts can now be linked over the same Ethernet LANs, using common communications protocols such

## Grasping the Token

Token-Ring sits with SNA as the most common of all SNA architectures in the U.S. and Canada.

	Number of sites
IBM mainframe ...	10,000
IBM mainframe with SNA ...	5,000
IBM mainframe with IBM Token-Ring ...	1,871
IBM mainframe with SNA and Token-Ring ...	1,234

Source: Focus Research Systems, Inc.  
CW Chart: Marie Hayes

as Transmission Control Protocol/Internet Protocol (TCP/IP), Netbios and Digital Equipment Corp.'s Decnet.

In contrast, IBM hosts tend to be enmeshed in the center of a hierarchical network, speaking an SNA language that has somehow never caught on in the LAN world, according to Layland. "IBM blew it way back when

they made Netbios the LAN protocol," Layland said.

Indeed, Travelers recently abandoned its idea of using IBM front ends to link LANs to an another because that would force LAN users to stick with the SNA protocol, Layland said. "Suppose someone comes out with the greatest insurance application that happens to use Netbios or TCP/IP?"

IBM "recognizes the requirement" of interconnecting LANs to LANs and hosts using the same communications platform, according to vendor spokesman Frank Whitten.

Travelers is seriously evaluating the idea of connecting its LANs via Network Equipment Technologies, Inc. T1 switches equipped with Cisco Systems, Inc. router cards.

Each host would be attached to one LAN via a front end so that users on one LAN could access hosts in the same way they would access any remote LAN resource — via the router connection.

Other companies said they

feel the need to formulate an overall connectivity strategy before they start evaluating particular products. Schwab has some Token-Ring sites now and is considering a much broader rollout that would be part of a broader strategy for "collaborative processing and cooperative work group computing," Payne said.

Allied Signal, Inc. is in the process of moving business applications off a mixed bag of mini-computers to either IBM mainframes or Token-Rings. However, the firm is not yet sure exactly how it will connect its LANs and IBM hosts, according to Allied technical consultant Alan Manley.

In particular, the Morris-town, N.J., manufacturer is struggling with how to interconnect remote LAN sites both with one another and with an IBM mainframe "in the center of the U.S." that acts as an electronic mail center running IBM's Professional Office System, Manley said.

Senior Writer Joanne Wester contributed to this report.

## LANs

FROM PAGE 1

they would add to its networks.

But for market leader Novell, working hand-in-hand toward interoperability with some network vendors may not be attractive, given the efforts and intentions of other vendors to crack Novell's viselike grip on the network operating system market.

Novell's newest competitor, Microsoft, is in the process of hiring 500 new employees to help it tackle the LAN market — which is, for all intents and purposes, Novell. Thus, Novell

must weigh the risks of participating in a technology exchange that would inevitably offer Microsoft a leg up in the name of interoperability.

Novell, which has sewn up roughly 65% of the PC networking installed base, with its Netware line, has pledged to interoperate with other network operating systems. However, some claimed that it has not delivered on the PC network level and has begun to backtrack on previous statements.

Janis Lewis, an analyst at Clarke Burton Corp. in Salt Lake City and a former Novell employee, said Novell has reneged on statements that it would

write the Netbios user interface into its protocol stack as it did with AppleTalk, for example.

"We work through IBM's bridges, we work through its Token-Ring," said Darrell Miller, executive vice-president for marketing and services at Novell. Miller said interoperability with Apple Computer, Inc. and Unix remain higher priorities for Novell than working directly with Microsoft.

However, that strategy carries the risk of alienating Novell's marketing and services at Novell. Miller said interoperability with Apple Computer, Inc. and Unix remain higher priorities for Novell than working directly with Microsoft.

Microsoft's Mike Murray,

manager of network products, said the choice of working toward greater network interoperability belongs to Novell Chief Executive Officer Ray Noorda.

"If I were Ray Noorda, I'd be wrestling with that issue," Murray said. "It takes a good sense for users to know that Novell and Microsoft are working together to achieve interoperability, and we'd like to see that happen."

"Baldersdash," responded Kanwal Rekhi, Novell's executive vice-president of product development. Rekhi and Noorda have both said cooperation between the two companies could begin if Microsoft would settle a \$500,000 contract dispute that has remained unresolved since Novell acquired Exacult, Inc., which had been developing some code for LAN Manager.

Microsoft, whose LAN Man-

ager has captured about 10% of the market, is reworking the product to make it more of a standard core system on which OEMs can build their own networks.

Another brother, 3Com, which has realigned its 3+Open line to tackle networking interoperability directly, introduced a server last week that runs on both 3+Open and Netware (see story at left). However, that server cannot fully integrate DOS, OS/2 environments, and users still must know some aspects of Netware.

Brinscoe, who has yet to use 3Com's new server, said, "I've worked on 3Com, Novell, AT&T and Banyan networks — installing, configuring and maintaining them — and it's a struggle with all of them. But connecting any two together? I don't see that at all."

## Hub hookup

3Com announced an alliance with Synoptics Communications, Inc. last week that will allow each company a toehold in their respective product lines. 3Com also announced an 80486-based server as well as the capability to run its 3Server systems on Novell, Inc. networks.

The agreement between 3Com, based in Santa Clara, Calif., and Synoptics, located in Mountain View, Calif., will have 3Com reselling Synoptics' System 3000 Ethernet intelligent wiring hubs. The System 3000 will also become an option on 3Com's network management system. Synoptics will use 3Com's network adapter cards in its own management system. The deal offers each greater market visibility.

Also last week, 3Com announced software drivers for its 3Server/500 and new 3Server/600 machines that will support Novell's Netware. Combined with 3Com's 3+Open Connection for Netware, the enhancements allow systems managers some management functions across their networks. The drivers are scheduled for delivery in the first quarter of 1991. No price has been announced.

Mary Lenahan, a marketing engineer at 3Com, said the DOS-based system was limited to handling "a subset" of OS/2 capabilities. Also, she explained, 3+Open users would need to know some Netware commands.

JIM NASH

## Incompatibility hinders gas company

BY JIM NASH  
CW STAFF

Incompatibility between Novell, Inc.'s Requester for OS/2 and IBM's OS/2 Extended Edition has stymied software development at a Southern California utilities company.

Jose Borges, a business systems analyst for Southern California Gas Co., has 1,200 workstations operating on 15 networks, six of which are DOS-based.

Borges said he cannot access two key applications on IBM's OS/2 product through Requester for OS/2 and will switch to a version of Microsoft Corp.'s LAN Manager if compatibility

cannot be established.

Southern California Gas is developing a mainframe distributed processing program that requires Database Manager and Communications Manager. Bob Morris, a computer analyst at the gas company, said workstations currently running Requester for OS/2 Version 1.2 will not support IBM Netbios-based applications on that particular workstation.

For example, Holmes said, if a manager in running IBM 3270 emulation through a Systems Network Architecture gateway on the network, emulation will not work on workstations running Requester. "That's because Communications Manager

is required to run the emulation application, and that application uses IBM Netbios," he said.

Bob Young, product line manager for Novell Network clients, acknowledged problems, saying that despite initial product statements that said Requester would support all Netbios applications, there were limitations. However, he said, the applications could not be transported between networks.

Borges said he did not know about transporting applications over internetworks. "My applications are due in June 1991," he said. "I need a commitment in my hand by the end of this year that a solution will be found. I want a plain business solution."



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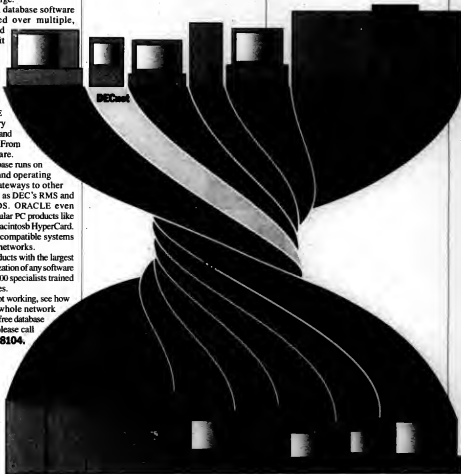
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## Douglas Aircraft IS reconditioned

BY JEAN S. BOZMAN  
CW STAFF

**LONG BEACH, Calif.**—There is a tremendous push at Douglas Aircraft Co. to get the new MD-11 commercial jet out the hangar door this fall. But nearly half of Douglas' information systems

staff will not be standing at the hangar to see the jumbo jet take off from Long Beach airport. About 700 of 1,400 IS staff members have been laid off or reassigned to a division that decides whether to automate certain factory "processes."

With orders pouring in, the

MD-11 jet, a replacement for the DC-10, is seen as the return ticket to profitability at the \$4.7 billion commercial aircraft division of \$14.5 billion McDonnell Douglas Corp. But IS support for the MD-11 engineering and development projects is being dismantled in favor of factory-door

support and construction of the planes.

"We wanted to create an organization that looked at process prior to anyone automating it," said Pauline Norholm, general manager at Douglas' Automated Systems Center, who heads up IS at Douglas.

Since February, there have been three IS reorganizations—including one in April and another

in July. Only 710 of 1,400 IS staffers are still working in data processing, a reduction from 1,089 last spring, Norholm said.

During the next few months, most of the remaining IS staffers will be brought to a central location here. This move will rein in scores of programmers and analysts who have been working at 28 buildings scattered throughout Orange County. "We're going to move 600 people into a central location, and we will make that happen by the end of 1990," Norholm said.

The IS decentralization is seen as a logical answer to long-standing problems at Douglas. "My end users, my customers, are 12 miles away in the main plant," said one senior IS manager, who did not wish to be identified. "How am I supposed to give them good support when I'm working all the way over here?"

The automation effort is part of the firm's Total Quality Management System, which top executives view as a weapon in McDonnell Douglas' battle with Europe's Airbus Industrie for second place against Seattle-based Boeing Corp.

"The reality is that most of the military contractors are marginally profitable," said Wolfgang Demich, director of research at UBS Phillips & Drew in New York. "If they're continuously on the lookout for what they can save through personnel reductions, they're making themselves less attractive as a place to have a career of any type, including data processing."

### Wean from E-mail

By recentralizing the staff, Norholm hopes to reduce dependence on electronic mail systems within the company. Douglas Aircraft shut off its IBM Professional Office System (Profs) in mid-July, leaving more than 22,000 users without access to a companywide E-mail system [CW, July 16]. Removing the resource-hungry Profs system will allow Douglas to remove one or more IBM mainframes, Norholm said, saving hundreds of thousands of dollars.

Even though no formal replacement for Profs has surfaced, users are patching together alternative E-mail systems. Douglas IS staff members reported. "We have many smaller systems, including Ethernet, Decmail, HP Desk, Microsoft Mail and others," one senior manager said. The replacement E-mail network should be in place by year's end, the manager said.

Users said they remain worried about the quick succession of layoffs, cutbacks and changes in the organization. "There's an uneasiness in the air," one senior systems analyst said. "You never know what's around the corner, and who's going to be the next one fired."



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# San Francisco considers VDT employee safety legislation

BY J. A. SAVAGE  
OF STAFF

**SAN FRANCISCO** — The county Board of Supervisors is considering a comprehensive measure that would establish VDT work conditions at companies of more than 15 employees.

Frustrated by the lack of protective action for users of VDTs from the California Occupational Health and Safety Administration (Cal-OSHA) and the state legislature, nine of the 11 officials on the board have expressed support for the VDT worker safety ordinance.

Local businesses have yet to organize any opposition to the bill, although several contacted last week expressed their concern. The ordinance would apply to workers who spend more than half their workday at terminals and would require employers to provide 15-minute work breaks every two hours and anti-glare screens on request and specify non glare lighting and light intensity.

The following other provisions would:

- Mandate adjustable chairs and desks and set a minimum standard for the thickness of chair upholstery.

- Minimum noise from impact printers.
- Require a minimum distance of five feet between a worker and the back of a terminal to minimize exposure to magnetic fields.

- Ask the director of public health to report to the county on studies of health effects from electromagnetic radiation.

The ordinance exceeds requirements in 1984 legislation for Suffolk County, N.Y., which was overturned by a state supreme court late last year and is on appeal. That court ruled that the state preempts the county in worker protection. The judge's opinion stated, however, that his decision "in no way" meant that workers were adequately protected.

"We have a different constellation of factors in California," said Laura Stock,

associate director of the Labor Occupational Health Program at the University of California at Berkeley. "People have been trying for years to get the state legislature and Cal-OSHA to institute regulations without any risk. Without those regulations, people are still working in poor conditions."

The bill's supporters said they expect intense lobbying against it, but it is too new for companies and organizations to have formal positions. United Airlines, which employs more than 600 people in its San Francisco reservations office, is having its legal department review it.

"We are concerned," a spokeswoman said.

AT&T does not yet have a formal position on the San Francisco ordinance but took a position against a similar proposal late last year in a neighboring California county. In a letter to county supervisors, AT&T stated, "A plethora of local, state and federal regulations on VDT use would make it extremely difficult and burdensome for an interstate company like AT&T to comply with them." The measure was not adopted.

Sue Lee, director of the Small Business Advisory Commission in San Francisco, said her organization has yet to take a formal stance, but she said, "Business folks don't like to be told what to do, no matter how serious the problem, or how much they want to do what's right."

Some firms are taking it in stride. A spokesman for Pacific Bell, which has over 45,000 VDT workers in the state, said that the ordinance would probably have little effect on the company. Pacific Bell announced in July that it was undertaking an \$8 million ergonomic redesign "to improve working conditions," he said.

The ordinance will be considered Sept. 18 in the City Services Committee (San Francisco city and county share jurisdiction) and will likely be heard by the board of supervisors by early next month.

# Apple readies low-end intros

BY JAMES DALY  
OF STAFF

**CUPERTINO, Calif.** — Apple Computer, Inc. users will get what they've long been holding for next month when the company announces a trio of low-cost machines that analysts said could help Apple regain some of the ground it has lost to makers of inexpensive IBM Personal Computer clones.

Six weeks before the scheduled Oct. 15 arrival date, however, there are already reports of a possible glitch in the delivery schedule: A much anticipated low-end color model is not expected to arrive until early next year, which would eliminate it from the Christmas sales rush and potentially stifle the excitement that is typically generated by new product introductions.

While most observers praised Apple's intention, some analysts said the low-end introductions will not go far enough. "They'll make Apple customers today remain Apple customers tomorrow, but they don't think they'll bring in new people," said Jim Poyner, an analyst at William Woodruff & Co. in Dallas. "Apple is about two years behind the curve in introducing these, and I think that's going to hurt them."

They'll make it said that while the new models will sound the death knell for Apple's current entry-level systems — the Macintosh Plus and Macintosh SE — they should also help invigorate Apple's softening domestic PC market.

"Apple needed a complete refurbishing of its 3.0 file system interface," said Henry Lorenzo, an analyst at San Francisco-based research firm Volpe, Covington and Welby. "They're facing an increasingly tough battle against IBM clones, especially with Windows 3.0."

Microsoft Corp.'s recently introduced Windows 3.0 is a user interface that many users and analysts say they feel emulates the simplified windows-and-icons screen display that helped propel the well-re-

ceived Macintosh to stardom.

If Windows 3.0 succeeds in a big way, Apple could have a tough time recovering: there are more than 40 million DOS-based PCs in the marketplace, compared with about 4 million Macintoshes, according to Woodruff.

Sources said that leading next month's announcement will be the Macintosh IISX, a high-performance machine based on Motorola, Inc.'s 68030 microprocessor that will offer eight-bit color and will cost about \$3,800.



The Macintosh LC, a low-cost color system using a 20-MHz Motorola 68020 microprocessor and also offering eight-bit color and 9M bytes of random-access memory, was also announced. Both an external color monitor from Sony Corp. and the LC will include

room for a chip board that will allow it to run applications for the Apple II.

The LC is expected to be priced at about \$2,800.

The Macintosh Classic is expected to be the low-end machine users have been waiting for. The 16-MHz Motorola 68000-based machine will offer either a 40M-byte hard drive or dual floppy drives, along with a built-in 9-in.-diagonal monochrome monitor; it is expected to resemble the Plus and SE it replaces. No expansion slots will be offered.

The Macintosh Classic is expected to cost about \$1,500, with street prices expected to dip below \$1,000.

Apple reportedly paid dearly for the "Classic" name. According to Guy Rabal, chief executive officer at Modular Computer Systems, Inc., Apple paid his firm \$1 million to acquire the name. The 20-year-old Fort Lauderdale, Fla.-based company manufactures the Modcomp Classic real-time computer system.

Apple is also expected to announce new system software that will take advantage of the increased capabilities of the new machines as well as a new monitor design.

# Dell extends PC line at high, low ends

BY RICHARD PASTORE  
OF STAFF

**AUSTIN, Texas** — Dell Computer Corp. broadened its personal computer lineup last week with five new machines ranging from a high-performance laptop to its first high-end tower servers. The multi-order pioneer also trod into minicomputer territory with the announcement of a disk array controller for its new servers.

Dell is squaring off against Compaq Computer Corp., the only other major PC vendor to offer PC-based disk array technology. Dell's drive arrays outperform single- and dual-drive configurations by assigning data across a number of drives and permitting simultaneous seeks.

"It is a critical technology for really high-end servers," Chief Executive Officer Michael Dell said. "Our customers want more disk I/O, not more processing power." Consequently, Dell pulled its developers off a multiprocessor project and set them to work on an array controller that will reportedly sell for about \$1,000

when it ships in the fourth quarter.

Analysts agreed with Dell's refusal on I/O. "With the 486, users have more than enough processing power, but as the PC gets into minicomputer territory, I/O becomes the predominant worry," said George Thompson, an analyst at Datapro Research Corp. in Dayton, N.J.

Compaq Systempore users praised the faster disk throughput that array technology makes possible. "It's ingenious technology," said Mark Olsen, a systems analyst at Cox Cable, Inc. in San Diego. "The fact that the data is distributed across two drives makes a difference."

Dell's 486-based tower systems come in 25- and 33-MHz versions and are based on the Extended Industry Standard Architecture bus. Prices for the 425TE, available now, range from \$6,749 to \$15,399. The 433TE, which will ship next month, costs from \$8,949 to \$17,599. Dell also added 25-MHz and 33-MHz Intel Core 386 desktop systems — priced at \$2,749 and \$3,349 — to its product line, and a \$3,599 80386SX-based portable.

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## IBM distributor sues to continue sales

BY MICHAEL FITZGERALD  
CHICAGO

XL/Datacomp, Inc. filed a three-point suit in an Illinois district court against IBM, alleging, among other things, unprofessional and "disparaging" conduct as the two companies phase

out a remarketing agreement. The loser in the case is likely to be the customer.

Datacomp has also accused IBM of illegally attempting to stop deep discounts on Application System/400 machines to customers it won under the remarketing agreement and for violating a separate agreement to

sell peripherals to Datacomp through 1991.

Industry sources said the suit is fallout from IBM's decision to stop deep discounts on Application System/400 machines to major distributors, such as XL/Datacomp.


"IBM got tired of these guys

selling the boxes without adding any value," one source said. "It's not an awful nice thing to do to customers, but IBM can get away with an awful lot — he who has the gold makes the rules."

At stake for Datacomp, a \$340 million firm that distributes and supports midrange computers and applications software, are 5,000 customers.

According to John Walden,

Datacomp's general counsel, IBM has its sales force telling Datacomp customers: "Datacomp will no longer be able to provide them with support service after December of this year and will not be able to deliver products that you order from them right now. So if you want delivery and support, you better do business with IBM." IBM refused to comment on the issue.



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## How many printers do you need?

BY J. A. SAVAGE  
CHICAGO

Hewlett-Packard Co. would like to see a printer on every desk. With the lion's share of the non-impact printer market, HP keeps lowering printer prices to make the printer-on-every-desk concept financially feasible. But no matter how cheap, users appear to be resisting personal printers.

"We'd all get fat from lack of exercise," said David Kelly, information systems analyst at the Federal Reserve Board. With a heavy printing requirement, Kelly said his department, which has over 200 workstations or X terminals, is getting away from small printers located every 20 feet. He is considering mainframe-size lasers on a network.

"We're not sure there is a price point at which we would put a printer on everyone's desk, no more than we'd put a copy machine on everyone's desk," an AT&T spokesman said.

Users said desk space is too valuable to be taken up by personal printers. Phil Cohen, director of research computing at the Research Institute of Scripps Clinic in La Jolla, Calif., said that while printers are necessary, one on every desk is "silly."

Trying to displace impact printer sales, HP introduced a \$729 ink jet printer last week, the Deskjet 500. The new model is priced almost \$300 below earlier models.

Although HP practically owns the nonimpact printer market, it is facing some bad publicity over its Lanierjet IIP printers. While the firm is not calling it a recall, it has identified 70,000 printers with faulty power supplies. The power supply, provided by Cereson U.S.A., Inc., fails after 1 1/2 years of use, according to the company.

An HP spokeswoman said about half of its customers have been notified, and a special hot line — (800) 233-5153 — has been set up for customer complaints. Only models bought before March with a serial number that begins with 3 have the defect. Printers will be fixed for free at local HP service centers.

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Quarterly Investment Returns



SYSTEM 2000

# IBM enhances Windows Connection

BY PATRICIA KEEFE  
CW STAFF

Indicating that it is not blind to user interest in Windows 3.0, IBM last week rolled out Version 2.0 of Windows Connection, said to integrate host sessions with desktop applications running under Microsoft Corp.'s Windows 3.0 environment.

The enhancement theme to the package, which was first introduced last fall, lies in using a graphical user interface to eliminate a variety of host access issues for workstation users. Not only can users jump back and forth between a host ses-

sion and a Windows application while viewing both on the same screen, but it is now easier to transfer data back and forth, IBM claimed.

IBM is also able to shield users from cumbersome host commands. "I can now double-click on the left mouse button and activate an [IBM Professional Office System] command, eliminating all those additional keystrokes [I used] in the past," said Thomas Murphy, product administrator for Windows Connection. "You can be in the host environment and still have the advantages of a [graphical user interface]."

Given that users often customize their keyboards, Version 2.0 allows for a pop-up key pad that provides all buttons in graphical form. "There are 18 keys that I can bring up on my screen to activate various host commands, including a macro. I can invoke a macro from this," Murphy said.

File transfer also takes on a graphical flavor. Users no longer have to go into a DOS shell and use a string of commands to change the naming convention to go from a DOS file to a host file. It is all done graphically.

IBM joins a rapidly crowding field.

Competitive packages include Rumba from Wall Data and Digital Communications Associates' Irma link.

Available Sept. 28, the IBM package will allow users to access hosts running VM, MVS or Application System/400 operating systems. It will run in two of Windows 3.0's three modes: standard and enhanced. Users who want to use 3.0's real mode should stick with Version 1.0 of Windows Connection, Murphy said.

Priced at \$214 per user, Windows Connection Version 2.0 requires an IBM Personal Computer or Personal System/2 with 1M byte of memory, Windows 3.0 and IBM's PC 3270 Emulation Program Entry Level, IBM Personal Communications/3270 or AS/400 PC Support. Upgrades from Version 1.0 cost \$85.



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## GENIE's flat rate prices no dream

BY ELLIS BOOKER  
CW STAFF

ROCKVILLE, Md. — GENIE, the on-line service from GE Information Services, announced a \$4.95-per-month flat-rate pricing structure last week for access to more than 100 of its services.

GENIE officials said the new pricing policy is the result of a market research effort that began 18 months ago. They denied that the move was in response to the rapid growth of Prodigy Service Co., the videotext service from Sears, Roebuck and Co. and IBM that charges a flat \$9.95-per-month charge.

"We got the results of the research in December," GENIE spokesman Steve Haraczak said. People, he added, are "apprehensive about the clock ticking," and traditional per-minute pricing structures have kept potential subscribers away from on-line information services.

Steve Hein, a spokesman for White Plains, N.Y.-based Prodigy, said that based on research begun in 1984, flat-rate pricing "is what will bring these services into the American home." Prodigy currently claims 460,000 subscribers, which is more than double GENIE's subscriber base.

Columbus, Ohio-based Compuserve, Inc., the nation's largest information services provider with close to 600,000 members, has no plans to alter its time-based pricing structure at this time, according to a company spokesman. Compuserve does, however, offer discount plans for a few of its most popular services, such as its interactive chat lines and on-line shopping system.

Under Star Services, which goes into effect next month, users will pay \$4.95 per month for evening, weekend and holiday access to the GENIE network.

Services that are not covered by the flat-rate option include personal computer bulletin boards, software libraries, financial services, chat lines and multiplayer games. While on-line, users can switch back and forth between the flat-rate and per-minute service. GENIE's prime-time rate for 300, 1,200 and 2,400 b/s/sec. access remains unchanged at \$18 per hour.

Four-year-old GENIE also reduced its hourly charge last week to \$6 per hour during off-peak hours for services not covered by the new monthly rate.



## ADVANCED TECHNOLOGY

## TECH TALK

## Virtually on video

■ The Association of Computing Machinery's Special Interest Group on Computer Graphics has released a videotaped report on high-definition television, computer workstations and virtual reality interfaces. "HDTV & The Quest for Virtual Reality" consists of two one-hour videotapes, full transcript, supplemental product information and other documentation and is priced between \$295 and \$505, depending on videotape format. The report is intended to be a practical buying and planning guide for anyone involved with workstations, video or motion-picture production and closed-circuit applications, the association said. For more information, call (800) 523-5503.

## Single ISDN chip

■ AT&T has developed a single-chip transceiver that meets Integrated Services Digital Network (ISDN) standards and has reduced the price of the two-chip transceiver it now sells for ISDN applications. ISDN is intended to simplify the delivery of advanced telecommunications services, such as simultaneous voice and digital communications, via twisted-wire pairs and other conventional means. The new device, like the chip pair that preceded it, will serve on both the central office and customer sides of the two-wire communications link, AT&T said.

## As easy as AC

■ Verran Electronics Ltd. says it has a method to untangle the spaghetti cabling that inevitably results when companies frequently need to move computer equipment. The English firm markets a device called the Verran AC Datalink, which allows computers to communicate via a building's AC wiring. The Datalink, no larger than a portable compact disc player, plugs into an AC outlet on the sending and receiving ends. It will be sold by GEC-Marconi Software Systems in Reston, Va.

BY MICHAEL ALEXANDER  
COLUMBIA

The current standoff in the Middle East could be either bad or good for business, depending on what your company's executives think will happen next. Some executives will act to minimize the impact of higher oil prices on profits, while others will look to reap unexpected benefits from the military buildup. The key is having enough of the right information on which to base business decisions.

Gathering and using information to advantage is the underlying theory of business intelligence systems, which attempt to bring to business the information gathering and analyzing methods of government intelligence agencies, much in the same way that military strategic planning tactics shifted into business practice after World War II. The difference is that the tool for gathering and analyzing information and distributing it to the proper decision makers is not a network of spies but a local-area network of personal computers.

"The people who fought the Cold War want to take the idea of intelligence gathering and convert it into a management tool," said Herbert Meyer, president of Real World Intelligence, Inc., one of only a handful of companies developing business intelligence systems for corporations. Meyer was a vice-chairman of the Central Intelligence Agency's U.S. National Intelligence Council during the Reagan administration.

The information that goes into these systems is culled from on-line wire services and other databases, magazine articles, annual reports and a variety of other sources. As the business intelligence system sops up infor-

mation, analysts use text retrieval software to filter and sort it into such categories as competition, customers, politics, economics, technology and other categories relevant to the corporation. Later, the information is packaged into easily digestible bulletins and reports that are distributed — often daily — to decision makers.

Business information systems — for which Real World Intelligence charges \$125,000 to \$150,000 for hardware, software and consulting on how to develop a corporate intelligence profile — differ somewhat from competitive intelligence systems, which focus mainly on the competition, and executive information systems, which are rarely text-based or designed to filter information before distributing it, Meyer said.

## Getting hot

Even though business information systems are in their infancy, "by 1992 or 1993 they will be the hottest item in the information world," predicted Jerry Wasserman, who tracks information industries worldwide as a vice-president and director at Arthur D. Little, Inc. in Cambridge, Mass.

With the Middle East crisis as a backdrop, a business information system could help executives map out a strategy to raise prices or seek alternative suppliers if the cost of oil were to cross a predetermined threshold. At another firm, executives might see the crisis as an opportunity to boost sales of defense-related equipment.

"What happens now is some expensive people spend expensive time trying to analyze an issue that might or might not be important," Wasserman said. "When I talk to really intelligent managers, the concept [business intelligence systems] is immediately salable. The skepticism comes around

when they ask if you can make it work."

What usually "works" is a system no more complex than five or six personal computers or workstations linked in a local-area network and sophisticated natural-language text retrieval software, according to Michael Pincus, president of Mnemotrix Systems, Inc. in Cleveland. His firm provides the technical expertise needed to build business intelligence systems.

## Hands-off approach

Pincus advocated that business intelligence systems be installed and administered with little involvement from the firm's IS managers. "When MIS is involved, you have to buy into all of the problems of any large corporate system," he said.

Also, few IS operations are geared to handle massive text databases, and few have installed natural-language text retrieval software that simplifies sifting and sorting information.

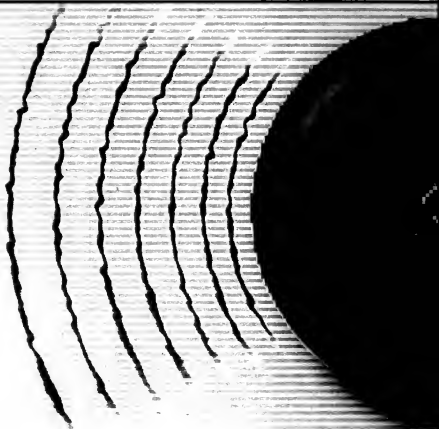
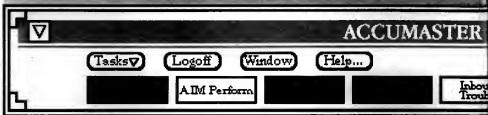
"The databases do not exist, and there is no clear idea of text management in MIS," noted James Tunis, president of Lincoln National Information Services, Inc. in Fort Wayne, Ind., an affiliate of Lincoln National Corp., a \$23 billion-per-year insurance and financial services corporation.

His division recently completed the installation of a corporate-wide office productivity network for 6,000 users that combines elements of business intelligence, executive information, electronic mail, database text retrieval and other systems.

"It is not a single tool that has some sort of huge, mystical database in back of it; that doesn't exist," Tunis said. "What does exist is the ability for any one of 6,000 users to send out questions to the areas that might have the answer."



David Stokes



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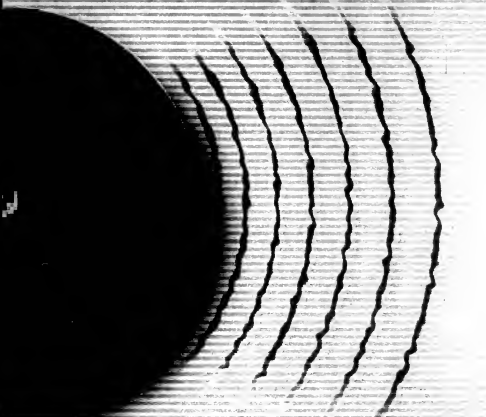
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## EDITORIAL

## Enlightened age

**B**Y ITS OWN estimate, IBM absorbs one of every five dollars spent on information systems throughout the world. By other accounts, the figure is closer to one dollar in four.

Whatever the case, when you consider the thousands of companies around the globe chasing the \$280 billion spent annually on IS, IBM's share is pretty astounding. Of that share, the critical mass of income for IBM is centered around the mainframe and all its attendant storage, connectivity and software revenue.

This Wednesday, IBM will unwrap its next-generation mainframes. The company will do so at a time when the future of mainframe computing is still being ardently questioned and aggressively doubted. Exactly *who* is doing most of the questioning and doubting is another matter. Given that IBM is expecting near double-digit mainframe growth once Summit reaches its full cycle in about a year, it clearly isn't the mass of corporate customers to whom the company has been speaking.

These days, support for the future of mainframes and the people who control them is coming from the oddest of quarters. Last month, *PC Week*, a leading microcomputer publication, admitted that the mainframe will play emerging roles on the corporate scene in the 1990s. That's from a publication that has consistently equated the mainframe with the brontosaurus.

Now, that publication says that "a growing number of departments will need their own IS directors." Mainframes and PCs actually coexisting, with IS folks providing the systems template? Even at the departmental level? Gee, isn't all that enlightening?

Even *Byte*, a longtime staple magazine within the PC user community, asked a panel of experts in a recent issue: "What do you think of the reassertion of power by data processing and MIS departments?" At *Byte*, the reassertion of the power is taken for granted. The responses were fascinating. Said one expert: "As long as you don't book yourself onto the network, you're OK." That will get you a long way in the '90s.

The rancor of PC zealots who have condemned the use of any platform not powered by a microprocessor is giving way to something they have consistently ignored — something called market reality. If there's one thing that smart IS managers and successful companies have known for a long time, it is this: It's not a mainframe world or a PC world or a mini world. For these people, platform loyalty doesn't matter a bit.

What does matter is that the available tools, whatever they may be, can be harnessed to get the job of corporate computing done with the least expense and the greatest speed. Running small spreadsheets on a mainframe makes as much sense as running a corporate communications hub with a PC. That's why companies don't do these things. That's why PCs have such a brilliant future and why mainframes will still be sold in 1999 and why IBM will still be in business along with those thousands of other companies.



## LETTERS TO THE EDITOR

## Responsibility

The cartoon that appeared at the top of your editorial page [CW, July 16] implies that large corporations are bearing up on smaller companies to quickly become EDI-capable. While I agree that this situation does unfortunately exist in some instances, there are growing numbers of examples of more responsible corporate behavior.

One such example was contained in an article in that very same issue: "Sears puts foot down, insists on EDI ability." Sears is most definitely going the proverbial "extra mile" by supplying both free software and training so that the transition to EDI for its suppliers will be all the more smooth.

While not all organizations have the resources of Sears, there are many other steps they can and do take to make EDI a win-win proposition for all involved. A bill has been introduced in the House of Representatives that directs the Small Business Administration to conduct a study of the impact of EDI on small businesses.

The Electronic Data Interchange Association presented the lead testimony at the hearing and has offered to assist SBA with the study. This is part of the association's Small Business Partnership Program, which includes providing tools needed by small businesses to get up and running with EDI in a cost-efficient fashion and assisting all organizations, both large and small, with establishing effective trading partner relationships.

Jerome L. Dreyer  
President and CEO  
The Electronic Data  
Interchange Association  
Alexandria, Va.

## Sooner, not later

I read with interest your editorial on the current rash of lawsuits in the proprietary rights area [CW, July 23]. I agree that the increase in litigation is unfortunate. It is, as you suggest in many ways, a symptom of slowdown in development.

However, I take issue with your last sentence: "Creativity often suffers when the lawyers get involved." The solution is to get the lawyers involved early, evaluate the risks and then take steps to minimize the likelihood of dispute.

In 30 years of studying the legal problems of the computer industry, my experience has been that much litigation arises because one or both of the parties did not bring the lawyers in until the contractual arrangements were too far along, or the product was on the market, or some financial commitment had been made that could not later be changed.

Lawyers are trained to foresee pitfalls and find creative legal solutions to them. Too often, the computer people avoid consulting knowledgeable lawyers until too late.

I find that the old aphorism regarding an ounce of prevention is particularly applicable to the computer industry.

Robert P. Bygelow  
Edgartown, Mass.

## Multiuser future

In "Multiuser DOS game plans to compete with LANs" [CW, July 30], you quote Globetrotter's Brian Ilari as saying that "multiuser DOS sounds like a contradiction in terms." With nearly 40 million DOS-based PCs on the market, the majority of which

are used by single users, I believe that there is certainly a strong foundation for that perception.

Indeed, that is one of the main reasons for the formation of the Multiuser DOS Federation. Times change, and new technologies emerge, including those that now stand the reach of DOS from one to many users. As a vice-president in charge of LANs, Ilari clearly has his biases. But let's face facts: Local-area networks were created as a way of managing the proliferation of single-user PCs. Their evolution into so-called "client/server" systems doesn't fundamentally change how LANs operate. However useful LANs have proven to be, they remain expensive, complex systems — systems that, one study pointed out last year, are down 6% of the time.

Dozens of companies today produce multiuser DOS products, from systems software and serial-port boards to graphics workstations and remote video controllers. They are succeeding in the marketplace because more and more business are beginning to realize they don't need LANs for every DOS work group.

Jack Dyer  
Vice-President and  
General Manager  
Thors Software Corp.  
Walnut Creek, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill LeVine, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD.

# Superhighways for computing

SEN. ALBERT GORE



It's time we redefined "infrastructure" for the information Age. Thirty years ago, the interstate highway system made sense for post-war America. Today, a nationwide network of information superhighways is needed to move the vast quantities of data that are creating an information gridlock.

We have more data than we can use. The Landsat satellite, for example, which can take a complete photograph of the Earth's surface every two weeks, has been recording pictures for 18 years. But 95% of those images have never been seen by human eyes. We have automated the process of collecting information without automating the process by which we absorb its meaning.

We have enough data to answer almost any question, but the sheer volume of data threatens our ability to answer any question. We are dealing not only with information, data we have internalized, but also with "information," data outside our conscious awareness that keeps us off balance because we know it exists even if we don't know where or how to use it.

Supercomputers can help us handle this vast surplus of information. Supercomputers can, if

properly used, give us the ability to instantly create elaborate visual models of the world around us and watch the way its elements interact, without the limitations of time and space.

But most of the people who could benefit from supercomputers don't use them. You can direct-dial Fairbanks, Alaska, from your breakfast nook, but you can't use the full power of a supercomputer without being in the same building. Our existing network of telephone lines will not carry the quantity of data supercomputers generate fast enough to make those elaborate graphic images. Today's networks suffer from what one expert calls "graphic jams."

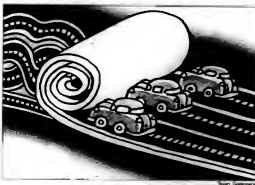
As Yogi Berra once said, "What we have here is an insurmountable opportunity."

If we had the information superhighways we need, schoolchildren could plug into the Library of Congress and explore a universe of knowledge. Teams of scientists and engineers working on the same problem in different locations could work out of a "co-laboratory" if their supercomputers were connected.

Medicine would benefit enormously. The "Human Genome Initiative" has already begun to store huge volumes of data about the human genome in a genetic information that makes up the human species, including details

about the 3 billion nucleotides in human DNA. Before the end of this century, doctors will routinely use this digital information to diagnose genetic-based diseases.

Our understanding of the environment will find greater richness and detail. The stunning



pictures from the Voyager mission to Neptune represented more than 1 trillion bits of data, but that's nothing compared with the data about our own climate system that will be produced in the "Mission to Planet Earth" program. If you quantify all the scientific information that currently exists about Earth, that much data will be beamed down from orbiting satellites every day during the mission's peak years.

How do we, as Americans,

prepare for this new world? The answer is a nationwide network of fiber-optic data highways to link supercomputers and digital libraries.

Congress is moving forward in a bipartisan way to adopt legislation I first introduced 11 years ago to create the network and digital libraries, stimulate development of more powerful supercomputers and increase the number of trained scientists and

the next two decades, estimating that when it is complete, as much as one-third of Japanese gross national product will come from new goods and services made possible by the network.

Europe, soon to be unified, is not far behind Japan in its plans. The U.S. still has a large lead in this area, but if we don't act to exploit that lead, it will disappear. For example, we make two-thirds of the supercomputers in the world — more than anyone else — but the real benefit comes from using them, and we don't. That's where the network comes in.

We didn't expect a turnpike company to build the interstate highway system, and we can't expect a private company to build the information superhighway. But, like the interstate system, once the information superhighway is complete, the demand for its use will skyrocket. And, as user fees are collected, private operation will be feasible. However, right now, it is a classic chicken-and-egg problem.

There's no network, there's no apparent demand for its use; because there's no demand, there's no network.

Our challenge is to process data into information, refine information into knowledge, extract from knowledge understanding and then let understanding ferment into wisdom. Supercomputers, digital libraries and a national information superhighway are critical if we are to begin to meet that challenge.

## We bring you the phone — now in living color

CHARLES LECHT



Last week, Nippon Telegraph and Telephone Co. installed an experimental commercial color or television picture telephone (CTVPT) in my office. It's the first of these phones installed in Japan — except at NTT — so I can't call anyone except personnel in NTT laboratories, where the CTVPT is undergoing testing and evaluation. I'm extremely excited about the possibilities this type of communication offers.

The CTVPT is about the size of a standard desk telephone, except for a 4-in. video display mounted to the rear on an arm that tilts for better viewing. The

display is about 1.5 in. thick; the arm also holds a video camera. The camera captures a 40-camera. The system's view can be tilted up and down to span an additional 40 degrees of height.

Included with the CTVPT is a keyboard for various text-creation uses. It doesn't take much imagination to envision this as a future uniform for users to obtain all the services PCs now offer — in this case, using telephone lines from NTT's central host, which contains the complex hardware and software needed to operate the CTVPT system.

The system also comes with an encoding/decoding box that controls the device and may be placed under a desk. This box has I/O ports for standard TV/intercom connection. The entire system is National Television Standards Committee (NTSC)-compatible, which

means that the signals the CTVPT receives can be shunted to any standard TV/intercom for large-as-life viewing or to a VCR for later viewing.

To use the phone, I first had to install a 64K-bit line between the local telephone office and my own. This is the line on which NTT has based its Integrated Services Digital Network. The CTVPT currently allows two usage modes: "real-time" or "store for later retrieval." In the first mode, people communicate on-line; the voice is continuous, but the picture changes every second. In the second mode, people store a message in a video mailbox for later retrieval by a recipient.

In the near future, the video display rates will reportedly increase to virtually continuous speeds. This will probably occur on multiple 64K-bit telephone lines. At that time, the world will have its first continuous color TV picturephone service in the public domain. Doubtless, some color and/or resolution will be lost if the technology reaches continuous speeds, but in my opinion, this will be hard to no-

tice for most applications because of current TV technology. The color tuning of most people's TVs isn't good enough to display what they may receive.

Because the CTVPT uses a standard NTSC signal, the potential uses of this telephone stagger the mind, even in this age of mind-staggering technologies. I think of the CTVPT as a micro-TV station that rivals the personal computer in the power it packs for its size. The fact that it can also be a personal computer with word processor, spreadsheet and other applications makes it potentially more valuable than a PC.

Of course, there are a few problems associated with the arrival of a CTVPT. Every step forward made through scientific innovation is accompanied by scores of complaints from various business and governmental interests who claim the step has been onto their toes.

For example, the various businesses and agencies that conduct and regulate video broadcasting, telecommunications, videomusic entertainment, theaters and so on are all

probably going to go bananas over the possibility that CTVPT may threaten their domains. The regulators of communication signals who are worried about our broadcast morals (or lack thereof) are also petrified about the possibilities the CTVPT offers in the sex business.

The copyright folks and their watchdog lawyers are doubtless jittery; and the CTVPT will be used to illegally copy copyrighted materials and to illegally distribute these via the phone.

We can only hope that these folks do have their way, or CTVPT usage may sadly be withheld from a public that can surely benefit from its arrival. It's far less likely that objections to the CTVPT will win out in Japan, where there is a shortage of lawyers, compared with America, which is drowning in them.

As for me, I see only good things coming of the age of the CTVPT. Aside from the obvious benefits the CTVPT offers people who are sick, aged, lonely, remotely located, mute or deaf, many other possibilities emerge that can drastically improve the quality of all our lives.

Lecht is an IDC News Service correspondent based in Tokyo.

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# SYSTEMS & SOFTWARE

## COMMENTARY

J.A. Savage

### Carrying a torch for HP

I detected an unusual note of skepticism at this year's Hewlett-Packard Users Interconference in Boston. Maybe it's the reluctance of users to move to open systems, where HP is pushing hard. Perhaps it's the private worries of HP executives over the company's ability to make its strategies work technically and profitably. Perhaps it was just the unseasonably cool, drizzly weather.

In the past, Intel has been a love fest. Users cooed at HP executives. "Feed me just a few more of those chocolate-dipped strawberries, the way you always have. Don't make me eat those cantaloupe bits; they'll upset my system." HP has always whispered back, "Sure, sweetie. I wouldn't want you to change a thing."

But HP appears serious about this open marriage—oops, open systems thing. "Here, just try these. You'll like them."

("Gag. Choke. Cry.") It's probably the best long-term survival strategy for the company. It's probably the best long-term strategy for users. But hey, now is now, hassle is hassle, money is money, and short-term profits are required.

HP's push to open systems is loosely defined in its 1990s strategy called New Wave Computing. That means, loosely, that everything, no matter

Continued on page 30

## AS/400 tiptoes into server role

Cooperative processing tools could open new market to IBM minicomputer

BY MARTYAN JOHNSON  
OF STAFF

With the promise of cooperative processing software that allows IBM's Application System/400 minicomputers to share their work load with IBM workstations or personal computers, vendors such as Computer Associates International, Inc. and Information Builders, Inc. are helping the computer giant boost the role of its premier midrange line as a host processor or client/server anchor.

"IBM has accurately sensed that client/server is more than the latest buzzword," said Kevin O'Neill, vice-president of research at Business Research Group in Newton, Mass. "This is a profound shift in the marketplace, and it's affecting IBM's traditional base among the Fortune 1,000 companies."

Yet IBM officials still tread cautiously when using the term "server" for the AS/400, because the machine has been mar-

shaled more as a general-purpose, departmental processor. Analysts are quick to point out that the AS/400's price and performance are far from competitive with specifically targeted servers.

#### View from a Prism

One customer counting on IBM adapting to a shifting market is Harry Willness, corporate vice-president of MIS at Campbell Soup Co. in Camden, N.J. Campbell is one of the early test sites for Prism/CP, a new Personal System/2 version of Marcam Corp.'s integrated manufacturing, logistics and cost accounting system.

"We would like to have a transparent view of data from the plant floor to our mainframe systems at the corporate data center," Willness said. "It's not always been easy to create that kind of environment, but this announcement is a huge step toward that ultimate goal."

IBM's announcement in New

York two weeks ago highlighted a range of cooperative processing applications, from manufacturing and financial packages to clinical assistance for doctors, purchasing at remote locations, materials management and insurance forms processing. The firms included Spectrum Healthcare Solutions, Software 2000, PDA, Inc., American Software, Inc., J.D. Edwards & Co. and Comshare, Inc.

All of their applications are still in development or early field testing stages, however, with delivery dates stretching out over the next year. In most cases, the vendors are not adding new features or functions but merely enhancing or established midrange application — redesigning it with graphical user interfaces, pull-down menus and windowing capabilities — to run on a PS/2 under OS/2 Extended Edition or a PC running MS-DOS.

Among the users watching this flurry of activity with keen

interest is Mrs. Fields Cookies, where MIS director Paul Quinn is planning to develop his own in-house cooperative processing applications using an AS/400 as the server for PC-based applications.

The enhanced C language compiler just announced by IBM for the AS/400 makes it possible to write applications in C for the IBM midrange and workstation environments and save programming costs, he explained.

In Travis County, Texas, an AS/400 Model B70 is becoming an "extended departmental processor" with a financial package from Orlando, Fla.-based HTE, Inc. running in cooperative processing mode in several departments. MIS director Frank Carcio said. When the new system goes "live" this October, the AS/400 will serve as host to multiple modules of the application, which are split up to run on dumb terminals in offices for the county auditor, purchasing, personnel and the treasurer's office.

"The way I feel, you can call it a group processor, a departmental processor or a hierarchical processor — but anything that does is what you need to take advantage of," Carcio said.

## Users not rushing to IBM software services

### ANALYSIS

BY MAURA J. HARRINGTON  
OF STAFF

Although IBM has labored to build up its National Service division over the past 14 years, profits have not come easily.

While users have applauded the company's efforts to accommodate its customers more than ever, tight budgets and cost-consciousness have made customers

slow to accept IBM's new software support services.

According to its second-quarter and first-half fiscal year earnings reports released recently, IBM posted a mere 5.7% increase in profit for support services in the first half of fiscal year 1990. By comparison, the company chalked up a 16% increase in software sales and a 36% increase in rentals and financing.

Among the service offerings announced in the past two years

by IBM were the Business Recovery Services program and various networking support services, including IBM Helpdesk, a toll-free, 24-hour support line assisting Personal System/2 users with third-party application software problems.

According to Thomas Exposito, vice-president of marketing for the National Service division, IBM has changed its strategy from a product focus to a customer focus by placing a heavy investment in its 1-year-old software services, such as Helpdesk and Softwareworld.

"We no longer say, 'This is what you need to buy.' Now we let them decide what they need, and we'll service it," including application software support, Exposito said.

"What IBM is offering its customers is a way to reduce their service costs," said analyst Howard Anderson, managing director at The Yankee Group, a market research firm that is based in Boston.

IBM's recent introduction of FASTService, a failure analysis and support technology software product running on an Applica-

Continued on page 30

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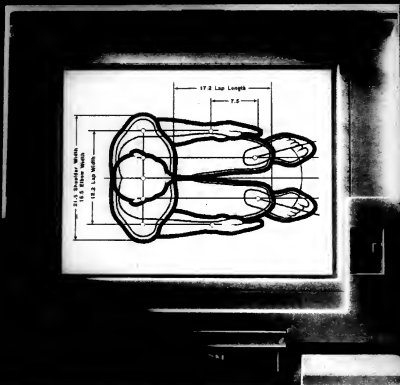
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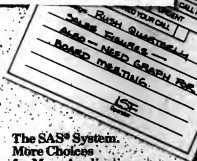
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Internal Memorandum

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FROM: Lab 9418  
RE: Product #2298 C11A

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# The sweet flavor of success

As Dreyer's grows, the power of HP minis grows to match it step for step

## ON SITE

BY J. A. SAVAGE  
OF THE

LAFAYETTE, Calif. — Roger Lindquist, the manager of information systems at Dreyer's Grand Ice Cream, needs a pocket protector, not because he has a pocket full of pens that might leak on his starched white shirt, but because of his tasting spoon.

Lindquist carries a plastic spoon in his pocket so he can taste ice cream without the hassle of searching for a utensil. And a few drops of rocky road could ruin his shirt.

Ice cream is serious business for Dreyer's, a \$300 million-and-growing company. But Lindquist is not even considering moving up to mainframes to manage the growing business. He is sticking with Hewlett-Packard Co. minicomputers and growing with them as they grow in power.

"If we were this size 10 years ago, we would have been stuck with mainframes, but we've been able to grow as minicomputers grow, and the prices and power are phenomenal," Lind-

quist said. "Why in the world would you want the hassle of mainframes?"

While Dreyer's hardware configuration grows, the custom software stayed vanilla, adding "little in the way of diversity."

Dreyer's started in the early 1980s with a HP Series 3000 Model 30 running at about 1 million instructions per second (MIPS) and is now up to a Model 950 running at 15 MIPS for its administrative tasks.

A warehousing system installed last year on an early-1980s Model 52 keeps the inventory of perishable desserts moving from warehouse to trucks to keep it from melting down before distribution.

Although the warehouse is 36 miles away, Lindquist said it is easier to monitor the computer in the main office and use leased lines to the warehouse than it is to position the computer remotely and have a separate staff.

It is not that he is opposed to decentralizing operations. A Fort Wayne, Ind., manufacturing plant has its own data processing. Dreyer's also has a new distribution center in New York; as

that grows, it would be a candidate for decentralized operations, Lindquist said. "With minicomputers, it's easy to peel off a database, cut your telecommunications costs and run it locally."

Lindquist said Dreyer's can continue minicomputer growth along with the company's own growth, because "it's a focused company. We just do more of what we're doing now; we don't go out and buy a pizza manufacturing company."

That focus allows Dreyer's to keep its computing needs straightforward. It does not have to add much new functionality to accommodate new business; it just has to grow in size as the size of the business grows.

Lindquist does not need a mainframe or fault-tolerant computer because, although the ice cream can melt, there is a big share of human responsibility in the market. The computers do go down on occasion, but "they are never down long enough to affect routes," Lindquist said.

Route drivers and managers are at the front lines in the ice cream market. If they do not have a computer telling them



Dreyer's Lindquist puts his ever-ready tasting spoon in good use

what to load on the trucks for their routes, they still know what their stores usually need. Much of the administrative functions run in batch, so they are not affected by a little downtime, according to Lindquist.

Dreyer's maintains a small IS budget — about \$1.5 million. But Lindquist said he expects it, as a proportion of revenue, to grow during the next few years:

"Once new users, like the distribution company in New York, find what they can get out of a CPU,

the use will go up." Still, Lindquist is not considering jumping to mainframes, serene in the knowledge that HP has a growth path available to increase CPU power by swapping boards in his current minicomputer.

As for that spoon, Lindquist explained that Dreyer's employees are encouraged to buy, and taste, competitors' ice cream and feed back information to the company on quality differences. "We can put ice cream on our expense accounts," he said.

## NEW DEALS

# UK postal service installs AS/400 midranges

The British Postal Service will be installing more than \$18 million worth of IBM Application System/400 midrange computers in what IBM said is the largest distributed processing application in Europe. The Royal Mail business of the post office will also install \$6 million worth of personnel and payroll applications from Software 2000 in Hyannis, Mass., at 64 sites in England, automating information on more than 140,000 employees. The computers will communicate by means of an X.25 network, with system management controls centralized on an AS/400 Model B70.

The Computervision business unit of

Prime Computer, Inc. recently announced a \$3.3 million contract with Ontario Hydro, a major Canadian public utility. The contract reportedly constitutes the largest sale to date for Prime's Canadian operations and calls for Computervision's Calma Dimension-III architectural, engineering and construction software and 40 graphics workstations to be used in Ontario Hydro's design and construction branch. The hardware and software will be used to create three-dimensional computerized plant models, according to the firm.

Eastman Kodak Co. announced a major purchase of mainframe applications

software from SAP America, a subsidiary of \$300 million West German vendor SAP AG, which is Kodak's applications vendor in Germany. Kodak will use SAP's R/2 system of 10 business applications in its business units, according to Kodak information systems chief Katherine Hudson. SAP America President James Beneman said R/2 will replace some current third-party packages as well as some internally developed applications.

Orange County Superior Court in Santa Ana, Calif., is installing a \$1.3 million image processing system — the first of its kind in a U.S. court of general

jurisdiction, according to Almo Senter, the court's executive officer. Initially planned for use in the court's probate department, 40 workstations from Plesent Corp. in Costa Mesa, Calif., will be used to put 844,000 pages of wills, guardianships and other probate documents on-line through a high-capacity optical disc library. Incoming documents will be scanned and stored in digitized form, which will allow simultaneous review from the workstations by court personnel, attorneys and the public. The installation is expected to serve as a model for other courts at local, state and federal levels. It is funded under a \$117,000 study grant from the Federal State Justice Institute, which intends to eventually publish a cost/benefit analysis of the system's impact on court operations.



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## Services

CONTINUED FROM PAGE 25

tion System/400 midrange machine, is also designed to save the customer unwanted service costs, although it will not be generally available until March 1991 (CW, Aug. 27).

Anderson said that although customers demand help and service programs, IBM's software services in the past have not grown as quickly as he expected they would.

As an example, Anderson mentioned Softwarexcel, a service designed to enable customers to solve their own systems problems by remotely entering information about their problems into IBM's Remote Technical Assistance In-

formation Network (RETAIN). RETAIN is a database that contains solutions to previously solved problems, an IBM spokesman said.

### Trickling in

"Given the enormous potential of Softwarexcel, we would have expected the users to flock to it. The customers are coming but not in the droves we had expected," Anderson said.

"Certain aspects of IBM's services have improved over the past year," said Rebecca Segal, an analyst at International Data Corp., a market research firm in Framingham, Mass.

The quality of service and IBM's increased flexibility with contract negotiations, for example, have gotten better, Segal said.

"But I think [IBM is] having problems... with some of their software services, particularly the Softwarexcel product," Segal added.

Why have customers not bought into the software product?

"Because the IBM account executives themselves didn't fully understand the product until a couple of months ago," Anderson said.

He suggested that another possible reason for IBM's slow growth is the competition it faces in the software services area.

Third-party personal computer application software support competition is cropping up from the likes of Digital Equipment Corp. and Andersen Consulting, Anderson said.

"We have electronic customer support [Softwarexcel], and that hasn't been all that great, but it has picked up in the last few months," said Richard Deckard, vice-president of information systems at Atlanta-based Manheim Auctions, a division of Cox Enterprises, Inc.

"I think that in terms of our services, the competition is more of a decision from our customers as to whether they will support their products in-house or call IBM," Espoisto said.

One client agreed. "As far as its network services go, [IBM's] Helpdesk product is too expensive. We found we could provide the same services for 30% less," said Gerald Ried, first vice-president at Firststar Information Services Corp., a division of The First Wisconsin National Bank of Milwaukee.

### Service roulette

Deckard, who has purchased both hardware and software support from IBM for its 27 automobile auction houses in the U.S. and Canada, said the quality of IBM's services is inconsistent.

"Some of their support services seem to be really good, and some aren't that good at all. It really depends on where you are in the country," he said.

According to Robert O'Neill, data center director at Fort Worth, Texas-based Pier 1 Imports, Inc., IBM's services are nevertheless getting better.

"In the last few years... [IBM has] gotten more flexible as to what it's willing to do for us," O'Neill said.

## Kodak custom outsource deals sans Helpdesk

Eastman Kodak Co., one of the earliest and largest in a series of companies signing IBM corporate outsourcing agreements announced last year, said that although there was discussion of signing up for software support, the company had decided against using IBM's Helpdesk service in favor of keeping its software services in-house.

The Kodak/IBM agreement, which was announced last July but really began in October of last year, called for "design, build and manage a new state-of-the-art data center for Kodak at its Rochester, N.Y., headquarters," IBM said.

However, the outsourcing agreement has been the exception to the rule for IBM in terms of the number of customers seeking "total outsourcing solutions," compared with the company's customer base.

During the past year, only four out of 12 potential outsourcing customers—including Kodak—signed customized outsourcing agreements with IBM, said William Wilson, general manager of Franklin Lakes, N.J.-based IBM System Services, Watson City, Tennessee. The other three outsourcing agreements were with New Orleans-based Hibernia National Bank, Atlanta-based Bank South and Memphis-based First Tennessee Bank, Wilson said.

Of the 12 customers [approached], seven decided to stay in-house with some restructuring help from us, and one company was lost to a competitor," Wilson acknowledged.

MAURA J. HARRINGTON

## Assistance available for IBM systems users

The following is a list of systems and networking services that are offered by IBM through its National Service Division.

- **Data Center Support.** Help with consolidation and restructuring, development and testing.
- **End User Support.** IBM's Helpdesk, education and training.
- **Network Support.** Network traffic analysis and network problem management.
- **Applications Software Support.** FASTService, automatic problem identification/recording/routing of problem assignment to appropriate personnel.
- **Software Support.** Softwarexcel, custom installation/migration, Systemxtra, problem management product services.
- **Business Recovery.** Disaster planning, large and midrange hot sites around the country.
- **Availability Management.** IBM and non-IBM repair and maintenance services.
- **Maintenance.** On-line service director, more flexible terms and conditions.
- **Site services.** Site planning, equipment configuration/installation, Quickstart/Customized Operational Services Express, which includes data center design and construction, cabling and relocation.

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## Savage

CONTINUED FROM PAGE 25

what company it's married to, is supposed to get along with everything else, no matter what. Like an extended family that actually gets along with no petty jealousy or greed, New Wave Computing is supposed to allow one application to schmooze on over to an idle CPU (even if it's on another operating system) and do its work.

In order to get there from here, HP users will have to make a few changes. For instance, HP said it would unbundle a database product from its proprietary operating system. Not that it will cost more, but it will just be separate. Users are clearly upset by having to deal with an in a carte approach. In fact, they were so upset that before the annual meeting ended, rumors of users picketing the company were floating about. No kidding. HP is nervous about changes, too.

One HP executive is clearly stressed by the lack of technical solutions posed by

New Wave Computing. He said that the problems—such as security and error recovery—in heterogeneous systems are at least becoming clear. And, as such, they can be tackled.

HP also appears a bit nervous about its bottom line. Just one week before the users meeting, its quarterly results showed a 5% decrease. By plunging into standards and becoming a commodity supplier, HP runs the risk of being under-sold and losing market share.

Perhaps the meeting should have been so near to home as the Boston Tea Party, although in this case it's the resistance to revolution, rather than insistence on it, that's brewing restlessness. It's almost as if users are losing an old lover, one who's joined a cult or something. Yet beneath the pitted feeling, if you send HP users to try a new arena, one with a three-letter name, they would rather stay alone in their room and pout about HP.

Savage is a Computerworld West Coast senior correspondent.

## NEW PRODUCTS — SOFTWARE

## Compilers

Ecoft, Inc. has released a modular upgrade of its integrated multiuser information system.

The Data Base System Version 1.1 includes transparent file sharing and shared-screen updating features that enable users to create multiuser Dbase-compatible applications from remote and local workstations. The product was designed as an add-in for Ecoft's The Bread Board System, which enables a single personal computer to provide up to 32 users with shared files and data.

A single-user system costs \$395. A 16-user version sells for \$995, and a 32-user system is priced at \$1,795.

Ecoft  
15200 E. Girard Ave.  
Aurora, Colo. 80014  
(303) 699-6565

## Applications packages

Syntelligence, Inc. has introduced a software application package that uses expert system technology to improve the quality, efficiency and consistency of a bank's commercial loan review, credit administration and portfolio management tasks.

The Lending Examiner can continuously monitor and re-evaluate commercial loans and rate them from best to worst. Potentially problematic loans are flagged before they become major liabilities. The product runs on an IBM System/370, Personal System/2 or Personal Computer AT. A license fee costs \$130,000, and a nonstandard interface for spreading systems is \$20,000.

Syntelligence  
1000 Hamlin Court  
Sunnyvale, Calif. 94088  
(408) 745-6666

Computervision, a business unit of Prime Computer, Inc., has introduced a software package that provides manufacturing firms with a data management framework to ensure an accurate flow of engineering data throughout heterogeneous computer-aided design and manufacturing environments.

EDM is composed of four modules: EDM Vault (offered free with a basic EDM system), EDM Projects (\$10,000 per workstation), EDM Programming (\$15,000 per workstation) and EDM Client (\$2,500 per workstation).

The product runs on Digital Equipment Corp. VAX/VMS and IBM VM/SP machines.

A basic system costs \$160,000.  
Computervision  
100 Crosby Drive  
Bedford, Mass. 01730  
(617) 275-1800

CAD Information Systems, Inc. has announced a comprehensive engineering standards and specifications management package. Cad-Fasteners is a computer-aided design-ready system that enables engineers and designers in manufacturing firms to access text and graphics standards and specifications and transfer the information into designs and documents.

The system runs on personal computers running Autocad, San Microsystems, Inc. workstations and Digital Equipment

Corp. VAX/VMS systems. It is available for \$8,175 per CPU.

Cadis  
6551 S. Revere Pkwy.  
Englewood, Colo. 80111  
(303) 799-1311

NEW PRODUCTS  
— HARDWARE

## Power supplies

Sola Electric has announced Sidekick Micro and Sidekick Plus, two uninterruptible

power supplies that feature a maintenance-free internal battery that provides five minutes of reserve time under a full load.

Sidekick Plus is a microprocessor-based unit designed to protect critical systems from blackouts, brownouts, surges, spikes and sags. It is available in 1,300- and 1,800-VA models.

Sidekick comes with VA ratings from 180 to 520 and sells for \$199 to \$599, depending on VA model. The 1,300- and 1,800-VA Sidekick Plus models cost \$1,495 and \$1,795, respectively, the company said.

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Elk Grove Village, Ill. 60007  
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## I/O devices

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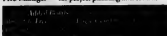
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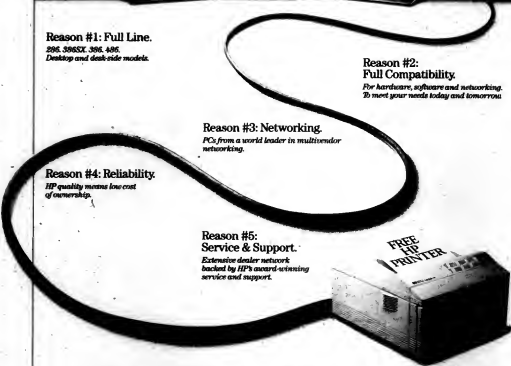
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# PCs & WORKSTATIONS

## COMMENTARY

Michael Fitzgerald

### Turn down the volume

Wake me when it's over.

The Battle of the Bands, I mean. You know, the Gang of Nine against IBM Music (IBM, for short) for best single of the decade.

It seems that all the hype and passion generated by the Gang of Nine's decision to break with IBM on personal computing architecture was just not enough to interest buyers. People read about how IBM, grown tired of having so many younger bands playing its songs — and selling more of them — decided on a new style, Micro Channel Architecture, better known as MCA.

MCA was supposed to be music to the ears of the corporate computing audience, offering faster throughput, multitasking and the like. IBM also decided not to license MCA, a move it expected would let it dominate the PC market.

But IBM thought wrong, largely because music lovers everywhere didn't care much about arcane architectural issues. In the meantime, IBM's rival groups were working on a response to MCA. Compaq, Zenith and others saw IBM's development of MCA as strictly a power play, designed to leave the rest of the industry high and dry, with no real way to compete directly. It was, in effect, an at-

Continued on page 40

## With friends like these. . .

Is Windows cracking the fragile relationship between Microsoft and IBM?

### ANALYSIS

BY PATRICIA KEEFE  
CW STAFF

Friends are friends, pals are pals, and buddies knite each other. At least that seems to be the code by which partners IBM and Microsoft Corp. are living these days, thanks in great part to an environmental shell for DOS called Windows.

So much so that the word on the street last week, as well as at the recent Windows Applications show in Boston, reached fever pitch. IBM is supposedly so irritated over OS/2's sluggish growth — which it blames in part on Windows 3.0's success — that it is ready to go off and do its own version of OS/2.

Meanwhile, at least one West Coast analyst maintains that Microsoft will never provide a smooth Windows-to-OS/2 migration path, instead milking Windows for all it is worth.

One report from analysts and developers is that IBM plans to add the Rexx job control programming language in its 2M-byte version of OS/2 or a later IBM-only revision. This is not seen as useful to anyone but mainframe shops using Rexx who want to hook their personal computers into the mainframe. Microsoft uses Basic.

At least one analyst envisions a scenario similar to what IBM and Microsoft did with MS-DOS and PC-DOS or MS-Net and PC-Net. The core remained the same, but IBM added a signif-

icant number of proprietary enhancements to the software.

A well-known developer recommended that if IBM does take proprietary steps with OS/2, it should take on a partner. The implication was that IBM needs help in developing microcomputer operating systems. The developer also added that if this does happen, he will ask his customers which OS/2 to write for.

For users like Price Waterhouse information systems director Sheldon Laube, any feud between IBM and Microsoft matters only if it delays the release of the 32-bit OS/2 2.0. Other users and developers worry about having to choose between two versions of OS/2. What seems the most likely that IBM will forget ahead with the so-

called OS/2 Lite — a trim, 2M-byte version of the operating system — with or without Microsoft's support.

IBM appears determined to pitch this version of OS/2 against DOS-based Windows 3.0. Many analysts and users are skeptical. "OS/1.3 is just stupid," said Bill Bluestein, an analyst at Forrester Research, Inc. in Cambridge, Mass. "The idea of doing OS/2 on [an Intel Corp. 80286] is just nuts. What will they have to take out of it in order to make it work?"

So why is IBM doing this? Would be OS/2 developers said that every time Microsoft "postpones" the release of OS/2 2.0, it extends the window for making money off of Windows 3.0.

"Last year, the relationship

was pretty bad, and [Microsoft Chairman Bill] Gates stepped in personally and shored it up," the West Coast analyst said, adding that things fell apart again after Windows 3.0 shipped. Both IBM and Microsoft deny that their relationship is anything but businesslike.

It's worth noting that IBM arrived at that decision 10 months after it symbolically linked arms — not more important, product strategy — with Microsoft at the November Comdex/Fall '89. In what many observers are now calling a purely political move, the two admitted the error of their argumentative ways and pledged to provide a single voice on a number of OS/2 issues: developers kits, servers, Extended Edition and a less memory-intensive version of OS/2.

Yet almost a year later, the servers remain different. Extended Edition remains bundled while the duo have produced a 2M-byte OS/2, only IBM seems to think it's important enough to market.

According to an IBM spokeswoman who insisted on speaking for the IBM executives involved, the company remains committed to those goals. But she could not provide a timetable or even say if these promises would be fulfilled this year. "We're seeing some softening of their resolve," said David Cearley, an analyst at Gartner Group, Inc.

IBM's Extended Edition may be OS/2's best-seller, but it is Windows 3.0 that will be the best-seller overall this year. It has already sold 1 million copies, and Microsoft expects to hit 2 million by year's end. Its very success could be the undoing of a long-term and very fruitful relationship.

## OS/2 Lite taste test

### The pros:

- Demonstrably better performance.
- Better file management and loading of applications.
- Lower memory requirement that brings OS/2 to a broader spectrum on the market.
- The potential to attract more developers to port their software to OS/2.

### The cons:

- Windows 3.0's performance on a 286 is not acceptable to many, so some critics contend that OS/2 Lite will fare worse.
- Users may either that they will still have to upgrade their 1M-byte 286 desktops or that they are already configured with 4M bytes.
- Applications are a bigger issue than memory.
- The possibility that Microsoft will not ship OS/2 Lite.

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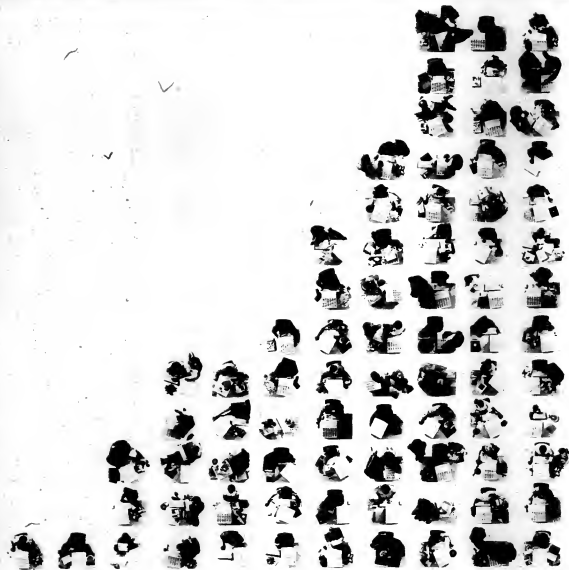
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## Lotus 1-2-3 for Sun

# Mating Intel PCs with RISC

BY RICHARD PASTORE  
CW STAFF

For the legions of users enjoying the familiar comforts of DOS applications and Intel Corp.-based personal computers, RISC technology may seem a foreign threat. But at least two vendors have recently brought the camps together on the same desktop, and users said they like the functionality the pairing provides.

In the past, makers of reduced instruction set computing (RISC) workstations have offered Intel coprocessor options. Though these matchups stirred relatively little market interest, vendors continue to try this approach [CW, Apr. 13]. However, others—including Yarc Systems, Inc. in Agoura Hills, Calif., and Alacron, Inc. in Thornwood, N.Y.—are taking the opposite tack. These firms are offering RISC coprocessor boards for use in native Intel/DOS boxes.

These hybrids have some ad-

vantages. "You would use such a machine to avoid the situation of having two keyboards on your desk," said Richard Shaffer, president of Technologic Partners in New York.

"Since a lot of people out there have PCs, there's certainly a good reason to plug in a [RISC] card rather than going out and buying a \$10,000 Sun [Microsystems, Inc. workstation]," added Pat Wood, vice-president of research and development at Pipeline Associates, Inc.

The most important advantages for power users are price/performance and compatibility. The RISC coprocessors provide computing prowess orders of magnitude greater than an Intel 80286 or 80386 CPU. Yet they offer access to the legions of DOS-based productivity tools.

The cards run applications about 2½ times faster than a 33-MHz 386 PC, said Danny Braswell, manager of signal processing at Nichols Research Corp. in Huntsville, Ala. Nichols uses

RISC cards from Yarc and Alacron.

"The Yarc card gets about twice the performance of a [Sun] Sparcstation 1 Plus, which is a \$10,000 box," added Wood, whose software development firm has installed Yarc cards in its 286- and 386-based IBM PC compatibles.

Card users typically require RISC's computing muscle for such application areas as graphics, engineering and optical character recognition. However, these same users are comfortable with their DOS-based tools and do not want to spend the money to completely switch over to RISC technology, according to George Thompson, an analyst at Datapro Research Corp. in Littleton, N.J.

"The reason we don't like to go [with Sun] is because the tools are so much more expensive there," Braswell said. A user gets more kick for the cash with a coprocessor board than he would with a Sun workstation,

Braswell contended.

However, users should not expect miracles from this technology tag team. The RISC board is not an Intel accelerator. Lotus Development Corp.'s 1-9-3 will run the same as always on the Intel chip. Users must buy or develop applications to run with the particular type of RISC chip used on the coprocessor board.

Users have run across other limitations. Though it is possible to run Intel coprocessors or RISC applications in

background with an environment such as Microsoft Corp.'s Windows, some users said they would prefer to have Intel handle the multitasking. The Yarc card does run Unix.

Also, in PCs operating at multiple clock speeds, boards have sometimes locked up when operating at the fastest speed, Wood said. The only ready solution is to run RISC applications at the slower clock speed, he added.

## Cross pollination

Two RISC coprocessors solving for work in Intel-based PCs

Card option	Yarc	Alacron
Processor	AT bus	AT bus
PC Platform	Intel-based	Intel-based
Operating system supported	DOS, Unix	DOS
Price	\$4,895	\$4,595

CW Chart Sources: Data

# Third-party dissension unnerves Apple users

BY JAMES DALY  
CW STAFF

While many Apple Computer, Inc. users remain as loyal as muffs to its and its popular Macintosh personal computer line, some have expressed uncertainty about Apple's future in wake of the increasing din from dissatisfied third-party product developers.

At the Macworld Expo in Boston last month, vendors and analysts launched a frontal assault on the Cupertino, Calif., firm, attacking its products, pricing and positioning [CW, Aug. 13].

In more recent interviews, Apple users generally agreed with the panel's conclusions and said the mounting severity of de-

veloper dissatisfaction is eroding their confidence in Apple's ability to remain a welcome corporate partner. Most are beginning to wonder if Apple's pugnacious reputation with developers will result in research and development efforts being steered away from the \$5 billion firm.

"Apple hasn't introduced a new technology in four years, and the only reason the company goes forward is because of third-party developers," said Mike Bailey, a systems integrator at Lockheed Missiles and Space Corp. "If these developers can't work with Apple, there is going to be trouble."

A likely realignment scenario could heavily involve Microsoft Corp., Bailey said. He added that

Microsoft's recent introduction of its Windows 3.0 graphical user interface was seen by some observers as an able substitute for Apple's simplified windows-and-icons user interface.

The panel included Claris Corp. President Bill Campbell, T/Maker Graphics President Heidi Roizen, Symantec Corp. President Gordon Eubanks and Aldus Corp. President Paul Brainerd. It called for a number of changes at Apple, including lowering prices, broadening its product line, stabilizing management, increasing connectivity with the DOS world and second-sourcing Macintosh technology.

Apple is reportedly ready to address some of these concerns. It plans to unveil two models in October with street prices expected to begin at less than \$1,000.

Still, Campbell called the current Apple product lineup and pricing "out of whack" with the rest of the industry. Although

some users classified his barbs as sour grapes — Apple recently announced that it would retain Claris as a subsidiary and renge on its pledge to sign off the unit — they conceded that if Apple does not make changes, it could hurt its own product sales.

## Third-party reliance

"I'm just hoping some of these third-party vendors stay in business, because we have a lot riding on their products," said Bill McClood, document publications systems manager at the Jet Propulsion Laboratory in Pasadena, Calif.

The upcoming announcements have calmed user concerns. "Apple has a lot going on behind the scenes, so I'm not ready just yet to get up on my soapbox and start screaming about what's wrong with the company," said Kim Arledge, microcomputer coordinator at the University of Texas.

For now, though, most users

are content to sit tight and see how Apple handles the ball developers have lobbed into its court. "I don't think our multi-year R&D efforts are going to get yanked around by short-term changes like Apple's rethinking of the Claris situation," said Ray Palkovic, director of information management at GTE Mobil Communications Group in Houston.

Despite the complaints, Apple continues to play the role of the Teflon company. No matter how bad Apple's problems, most users said they had no plans to abandon their Macintosh systems. "The versatility of the Macintosh usually fattens out whatever rough spots Apple may be going through," said Rick Chintjansen, manager of automation support at Maville Corp. in Denver. "I put \$6,000 worth of computer [equipment] on a person's desk, and they not only use it for their job, but it also becomes a way of life."

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# Driving into the age of automation

Georgia residents use network of diskless PC stations to take their driver's license exams

## ON SITE

BY SALLY CUSACK  
CW STAFF

MILLEDGEVILLE, Ga. — Taking a written driver's license examination at the Milledgeville, Ga., Department of Public Safety is as easy as pushing a button these days. Applicants simply present the required personal data to the licensing examiner, cross the room to an assigned workstation and begin the test.

This summer, Milledgeville became the third post in the state to install the local-area network-based system. Developed by Bull HN Information Systems, Inc., the network consists of 21 diskless personal computer stations equipped with customized keyboards and software graphics designed to illustrate the multiple-choice questions for both standard and commercial driver's license tests.

"People seem to understand the machines better than the paper questionnaire," noted Ronnie Murphy, chief ex-

aminer at the center. Murphy tests about 150 people each week. Prior to the computer installation, applicants were tested at the Milledgeville post or at a third-party testing facility.

When applicants enter the center, they go to a work area to turn in the documents authorizing the test. The information is taken by an examiner at a designated examiner's station, and the applicant is assigned a machine. All the machines are numbered, Murphy said, and by the time the person walks over to the designated

box, all personal information is displayed on the screen, including name, date of birth, sex and Social Security number.

"The screen provides information about the test and provides a sample question," he said, adding that each key pad has been customized with the letters A, B, C and D. "If someone fails a particular test, they are instructed to go back to the work area, where the examiner's station is, for further instruction."

Twenty terminals on-site display the exams. Dubbed Netstations, each has a bolted-down keyboard to create a virtually tamperproof system, according to Bull. There is also an Intel Corp. 80386-based server connected to the test stations via a 3Com Corp.-based Ethernet LAN. All systems operate with the Automated Driver License Testing System (ADTS), developed by Bull and written in QuickBASIC, with a database that maintains more than 500 multiple-choice questions.

The typical configuration is set up in a countertop arrangement, a Bull spokesperson said, and the server is usually hidden away, out of sight. The examiner's station is usually an Intel 286-based machine, but a diskless PC Netstation can also be used if the examiner so desires.

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the driver with an on-screen, multiple-choice question. The driver then enters the selections by pressing the corresponding letter on the keyboard. The computer randomly selects 50 questions, some drawing on general knowledge and others that test knowledge specific to the driver's specialty licensing areas. Graphic displays include road signs, intersections, traffic lights, roads and other symbols commonly associated with driver's license testing.

In Milledgeville, the equipment was installed and training was completed in approximately one week. Of the 20 Netstation test computers, one has been designated to accommodate handicapped drivers. "The machine is placed lower than the others and allows space for a wheelchair in front of the screen," Murphy said. "The other 19 stations require that a person be standing to take the exam." The Bull ADTS can also be configured in several different languages and can be administered in audio mode for applicants that may require an oral exam.

A major advantage of automation is that the machines figure individual scores and provide percentages of possible results — factors that used to be tabulated manually, Murphy said. Now the center can move drivers through at a faster rate. The software also provides internal question response tracking, which targets questions that may be vague or difficult to understand. Only supervisors are authorized to change or delete questions.

The Milledgeville post plans eventually to be tied into a computer at its Atlanta headquarters, but a specific date has yet to be set. The ADTS is currently used in several states, including New Jersey and Florida.

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**IBM**

## Fitzgerald

FROM PAGE 33

tempt by IBM to force everyone else into retirement.

The Gang of Nine looked at what they felt was a blow to IBM's plan: Add-in boards for the old Industry Standard Architecture machines wouldn't work under MCA. So they told buyers, "We can give you all those great sounds in the same industry-standard style you're used to. We're going to make new music, too, but you don't have to throw out all your old boards." That was born the Extended Industry Standard Architecture (EISA).

IBM came out with its new sound first, in 1987 (it still produces its former pop sounds, too). The Gang of Nine came out in force just this year. But the delay didn't hurt it because neither machine has proven a chart buster. Nor are sales expected to increase much in the next two years or so. Why? Did the artists lose their commercial touch?

Maybe, says that hip critic Seymour "Sy" Merrin, speaking from the swing town of silicon, Palo Alto. "The reason nobody's too terribly concerned about MCA vs. EISA is that whatever they want to do, there'll be a

board that'll do it," Sy shrugs.

For instance, MCA and EISA machines will run on the same local-area network and will even run the same software. Dig those crazy sounds, cats.

What has happened is that both architectures have their value; two solid, stable standards exist, and users will have a choice as to what they want to hear, when they tire of the old sounds. And there they will, eventually, industry critics say.

They expect that the listening public will eventually love both types of machines, but for now, users are happy with what they have. Both IBM and the Gang of Nine would like it to be otherwise but have succeeded only in offering powerful machines that offer users a choice, for a change.

Perhaps IBM and the Gang of Nine should listen to the song played by Bill Gates and the Microsofts, their remake of Windows has, if nothing else, kept it close to the play list. Actually, big, memory-eating programs like Windows might just get people to clamor for both EISA and MCA. Meanwhile, I think someone pulled the plug on the amplifiers—I just don't hear anything worth all that early fun.

Fitzgerald is a Computerworld Midwest business correspondent.

## MICRO BITS

# Outbound to offer Mac-friendly laptop

Apple Computer, Inc. and Outbound Laptop Systems have reached an agreement that will allow Outbound to offer its nine-pound Macintosh-compatible laptop and related peripherals without infringing on Apple's intellectual property rights.

Microsoft Corp. is tapping Sytron Corp.'s tape backup software for packaging in its interactive LAN Manager 2.0 operating system. IBM has also given the nod to Sytron's Sytos Plus for use as a backup-and-restore utility for OS/2 1.2 and DOS 3.3 and 4.0. The backup software package will support IBM's 6157 tape drives and 3½- and 5¼-in. disk drives in the Personal System/2.

IBM Canada has acquired an 11% stake in Delrina Technology, Inc., a developer of personal computer-based business forms pro-

cessing software. Delrina plans to port its Perform package for OS/2 and Presentation Manager. A Windows 3.0 version is slated to ship this summer. IBM already markets a DOS-compatible version of Perform under its Forms Available When Needed program.

Indigo Software Ltd. and IBM signed a cooperative software marketing agreement under which IBM's direct sales force will market the Indigo printer software, including Jetform-Design, Jetform-Form, Jetform-Server and Jetform-Merge.

Hewlett-Packard Co. and Mentor Graphics Corp. have signed a three-year, \$400 million contract under which Mentor will purchase HP Apollo division workstations, servers and other hardware and software products and services.

## EIS includes AI functions

AUSTIN, Texas — Execucor Systems Corp. has introduced Paradigm, a workstation-based executive information system (EIS) that uses built-in artificial intelligence capabilities said to help users interpret data.

Paradigm examines the information in the user's database through a menu-driven, point-and-click process that shows the current status of the organization by interpreting specific performance variances or simulating specific business scenarios, the company said.

Paradigm is designed to combine financial management modeling, AI, spreadsheet systems, analytical tools, application building, database access query and analyses, said Steve Murchie, Execucor's Paradigm product manager.

Due out this month, Execucor's EIS runs on Digital Equipment Corp.'s Vaxstation workstations. Priced at \$1,500 per workstation, it will be marketed to senior executives and systems analysts and is compatible with all Execucor EIS planning tools.

MAURA J. HARRINGTON

## NEW PRODUCTS

### Software applications packages

Vmark Software, Inc. has announced Uni-verse Release 3.4, a multitier, multitasking relational database management system and application development environment.

The product, which runs on all major Unix systems, is compatible with Prime Computer, Inc.'s Prime Information systems and Pick Systems' Pick. It is available for \$315 or \$375 per user, depending on the number of users.

Vmark Software  
5 Southwester Road  
Natick, Mass. 01760  
(508) 655-3700

Viewstar Corp. has announced VS Retrieve, a Windows-based software application that provides tools for querying, retrieving, viewing and outputting documents managed by Viewstar's back-end document database management system.

The product supports viewing of standard-size business documents and large-format engineering drawings. It supports all defined modes of windows operation, including real, standard and enhanced 386 modes.

VS Retrieve uses Microsoft

Corp.'s Windows 3.0 as its chief operating environment. A single-user license costs \$1,450, and other licenses range from \$5,887 to \$79,750, depending on number of users.

Viewstar  
5820 Shellmound St.  
Emeryville, Calif. 94608  
(415) 841-8565

Prisma Software Corp. has introduced an upgraded version of Your Way for Microsoft Corp.'s Windows Version 3.0, a software package designed for users of IBM Personal Computers and compatibles.

The product features Data Exchange and Dynamic Data Exchange functions that enable users to share data within their own systems and among applications. The upgrade runs under Windows 2.1 or 3.0 and is priced at \$289.

Prisma  
17000 Preston Road  
Dallas, Texas 75248  
(214) 380-6370

### Data storage

Softsource's Block Librarian storage and retrieval system has been upgraded to support up to 50 libraries to provide a total of 500,000 blocks.

Release 10.5 enables users to create separate libraries for

electrical symbols, architectural symbols and other libraries. An interactive storage feature enables graphic representations of blocks to be generated immediately after a block is defined and placed in a cell, the vendor said.

The product operates under Autocad Version 2.5 or higher and runs on Novell net networks. It is priced at \$495, and registered current owners can upgrade their systems for \$50. Softsource  
301 W. Holly  
Bellingham, Wash. 98225  
(602) 676-0999



Softsource's Block Librarian provides 500,000 blocks

Sun Moon Star has announced the 286-12/CD system and CD-Set, two compact disc/read-only memory (CD-ROM) products that enable users to access reference materials from a personal computer.

The 286-12/CD, priced at \$2,995, includes a 40M-byte hard disk drive, a color monitor, a mouse and CD-Set-Go, Sun

Moon Star's installation software package. CD-Set provides CD-ROM capabilities to users of IBM Personal Computer ATs or compatibles. It is available for \$995.

Sun Moon Star  
1941 Ringwood Ave.  
San Jose, Calif. 95131  
(408) 452-7811

### Software utilities

Vartec International, Inc. has introduced a product designed to emulate the MS-DOS versions of its PS-Menu software package.

Unix PS-Menu provides users with a menu interface across MS-DOS, personal computer local-area network, Microsoft Corp.'s Windows and Unix platforms. Its menu system allows users to run advanced Unix commands and create global and private menus.

The product is priced at \$295 for Santa Cruz Operation Xenix 286 systems and \$495 per CPU for CD Xenix/Unix 386 workstations.

Vartec  
3 Regent St.  
Livingston, N.J. 07039  
(609) 356-1770

Microcom, Inc.'s Software Division has announced an enhanced version of Relay Words for Microsoft Corp.'s Windows Version 3.0.

The software package provides users of Windows 3.0 with mainframe connectivity such as

asynchronous and token-ring gateways. Relay Words includes a system application Architecture Common User Access graphical user interface that can be controlled with a mouse and supports IBM's High-Level Language Application Programming Interface.

The product began shipping last month to existing customers for \$299.

Microcom  
500 River Ridge Dr.  
Norwood, Mass. 02062  
(617) 551-1000

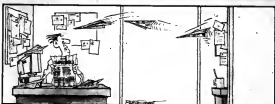
Advanced Computer Innovations, Inc. has released Wordport Version 1.2, a word processing conversion software package that runs on IBM Personal Computer XTs, ATs, Personal System/2s and compatibles.

The menu-driven software can be used to directly convert document files between all versions of Wordperfect Corp.'s Wordperfect, Wordstar International's Wordstar, Microsoft Corp.'s Microsoft Word and IBM's Displaywrite programs without requiring an intermediate conversion.

Wordport Version 1.2 requires a disk drive and 256K bytes of memory. It is priced at \$149.

Advanced Computer Innovations  
30 Burncoat Way  
Pittsford, N.Y. 14534  
(716) 383-1939





- BUSINESS INDUSTRY** (Circle one)
18. Manufacturer other than computer
  19. Franchisor/Manufacturer/Dealer
  20. Manufacturer/Software
  21. Wholesaler/Retail Trade
  22. Business Service (except CP)
  23. Government - State/Federal/Local
  24. Non-Profit
  25. Communications Systems/Public Utilities/Transportation
  26. Manufacturing/Construction/Professional/Engineering
  27. Manufacturer of Computers, Computer Related Systems or Peripherals
  28. System Integrators, Vendors, Computer Services
  29. Business Software Training & Consulting Services
  30. Computer Peripheral Developer/Reseller
  31. User - Other \_\_\_\_\_ (Please specify)

- TITLE/FUNCTION** (Circle one)
- STATUS OF MANAGEMENT**
18. Chief Information Officer/Vice President/Chief VP
  19. CIO/IS/IT Management
  20. Director of Information Systems, Information Center
  21. Director of Systems, Planning, Admin. Servs., Data Center
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- OTHER COMPANY MANAGEMENT**
11. President, Owner, Partner, General Mgr.
  12. Vice President, Asst. VP
  13. Executive Committee, Financial Officer
  14. Engineering, Scientific, R&D, Tech. Mgr.
  15. Sales & Mktg. Management
  16. Medical, Legal, Accounting Mgr.
  17. Educator, Journalist, Librarian, Student
  18. Other \_\_\_\_\_ (Please specify)

**COMPUTER INVOLVEMENT** (Circle all that apply)

Type of equipment with which you are personally involved either as a user, vendor or consultant:

- A. Mainframe/Supersystems
- B. Microcomputers/Small Business Computers
- C. Communications Systems
- D. Communications Systems
- E. Local Area Networks
- F. No Computer Involvement

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18. Manufacturer other than computer
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  20. Manufacturer/Software
  21. Wholesaler/Retail Trade
  22. Business Service (except CP)
  23. Government - State/Federal/Local
  24. Non-Profit
  25. Communications Systems/Public Utilities/Transportation
  26. Manufacturing/Construction/Professional/Engineering
  27. Manufacturer of Computers, Computer Related Systems or Peripherals
  28. System Integrators, Vendors, Computer Services
  29. Business Software Training & Consulting Services
  30. Computer Peripheral Developer/Reseller
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  13. Executive Committee, Financial Officer
  14. Engineering, Scientific, R&D, Tech. Mgr.
  15. Sales & Mktg. Management
  16. Medical, Legal, Accounting Mgr.
  17. Educator, Journalist, Librarian, Student
  18. Other \_\_\_\_\_ (Please specify)

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- C. Communications Systems
- D. Communications Systems
- E. Local Area Networks
- F. No Computer Involvement

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First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_

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# NETWORKING

## COMMENTARY

Jeffrey N. Fritz

### Jumping the ISDN ship



They're dropping like flies. One by one, vendors are abandoning the Integrated Services Digital

Network (ISDN) customer premises equipment (CPE) market.

Isoltron in Cherry Hill, N.J., was one of the first to call it quits. The firm, which offered both an ISDN terminal adapter and a personal computer communications card, pulled out of the market early last spring.

Hayes Microcomputer Products in Norcross, Ga., received a lot of attention when it announced its ISDN communications card and created an even greater stir with the announcement that it would append the standard AT command set to add ISDN support. But later to Hayes' surprise, ISDN product development, Users were shocked. The addition of Hayes to the market had signaled a validation of ISDN by perhaps the premier modern manufacturer.

There have been others as well. A few months ago, Richardson, Texas-based Vadis announced its departure from the ISDN market. Until very recently, Vadis could be found displaying ISDN products at trade shows and conferences.

Continued on page 42

## Moving away from mainframes

LaSalle expects its switch to PC LANs to pay off in savings and flexibility

BY ELISABETH HORWITZ  
OF STAFF

CHICAGO — LaSalle Partners, Inc. is taking a slow and considered approach to moving applications from IBM 4341 mainframes to personal computer local-area networks and possibly some Unix-based multiuser systems as well.

Considering itself "too small to make a major investment in MVS ESA 3090s, which is the way IBM is pushing us," said Vice-President of Information Systems Michael Jones, the 700-person real estate investment management firm wants to take advantage of the cost performance and application flexibility benefits of PC networking.

"We think we can more effectively address on PCs the differ-

ences between our businesses" in terms of business applications such as portfolio management, property management and asset valuation, Jones said.

In addition, Jones said he hopes LANs will help users work together much more effectively through electronic mail and groupware programs that "foster exchange of information, intergroup projects and group scheduling. Ultimately, I see every professional in the company using LANs." LaSalle currently has 550 to 600 PCs installed, Jones said, with most

professionals using Intel Corp. 80386-based systems.

Another major benefit that LaSalle hopes to gain from downsizing is the ability to cost-effectively develop a flexible, SQL-based querying system that will save users from "having to call MIS for their reports," Jones said.



LaSalle's Jones opts for benefits of PC networking

The current mainframe-based querying package from D&B Software Services is difficult for users to learn and use, he added. However, "the costs of implementing DB2 on the mainframe are too large for the benefits. We can get

there more effectively on a LAN," he added.

LaSalle said it expects to move 70% of its data down to distributed group systems while retaining the other 30%, which needs to be centrally controlled, on the mainframe, Jones said.

However, the company plans to take things slowly to ensure that it picks products that do things right the first time around, Jones indicated. With a staff of 35 people, Jones does not have a Fortune 500 IS director's resources for correcting the technical glitches that tend to crop up in immature products, he said. "They can just throw bucks at a problem."

Some problems have cropped up already. For example, as part of its evaluation of Microsoft Corp.'s MS-DOS vs. OS/2-based PC platforms, LaSalle tested Windows with DOS, only to find that the software "requires almost as much memory as OS/2," said technical services

Continued on page 46

## Good Netware support hard to come by — ever

BY JIM NASH  
OF STAFF

Network computer network administrators needing technical support are caught in the worst of two worlds.

As one user points out, mainframe managers get high-quality support from a few good vendors and distributors, but at a dear price. Personal computer users can find free support almost any-

where, but it is of questionable reliability.

Users of Novell, Inc.'s Netware cannot find reliable support at any price, one administrator said.

On both national and regional levels, users are asserting that nobody has seen the troubles they have seen — not even Novell. In light of this, Netware systems administrators are talking about a user-expert database,

one that would catalog companies to whom they can turn with specific networking problems.

Frank Goodyear, president of the Orange County Netware Users Association, said that for the past year, systems managers have been gathering informally to brainstorm ways in which users can help each other without involving Novell. Goodyear is also a Novell reseller.

It is no secret that one of the most bruising claims in Novell's armor is its user support. Even company executives acknowledge the shortcoming. The Provo, Utah-based networking giant's solution has been to "push knowledge out to resellers and

minimize direct calls to Novell," a Novell spokesman said.

As part of that strategy, Bob Gimigliano, Novell's major account manager in Southern California, said he and Goodyear identified about a dozen large Netware users last year and gathered them together for informal talks about their problem-solving experiences with Netware. Gimigliano said similar efforts are taking place in other regions.

Today, the Southern California group includes University of California campuses in Los Angeles, San Diego and Irvine, as well as Bergen Brunswig Corp.

Continued on page 42

New Version!

## Zero Learning Curve SPF/PC® 2.1

The MVS programmer will feel right at home using SPF/PC, the only PC editor functionally equivalent to editing on the IBM mainframe with ISPF/PDF, Release 2, Version 2.

SPF/PC fills the mainframe user's needs with a familiar environment, commands, large file support and micro-to-mainframe file portability. SPF/PC also offers:

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- 50-line VGA
- picture strings
- user interface
- online help
- utilities
- binary editing
- network support



SPF/PC includes many PC-productivity features to save time and keystrokes, such as direct access to BROWSE and EDIT directory lists from the DOS prompt.

Want proof? Ask us for a FREE, interactive demonstration diskette.

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# ISDN device for AS/400 to debut

IBM and Teles join forces, aim application platform at niche markets

BY SALLY CUSACK  
CHICAGO

EATONTOWN, N.J. — A development partnership between IBM and Teles Communications, Inc. has yielded an Integrated Services Digital Network (ISDN) device for building ISDN applications on the IBM Application System/400.

Targeted at third-party software vendors, the Teles IRX9000 ISDN Resource Exchange is a computer-to-switch ISDN application platform specifically designed to support IBM's Callpath/400 software over a Token-Ring network. This allows third-party application builders to integrate ISDN networking capabilities with the data processing functions of AS/400 minicomputers.

"The primary question here, as always, is does it have any measurable impact on the deployment rate of ISDN?" said Thomas L. Nolle, president of CIMI Corp., a Voorhees, N.J.-

based consulting and research firm. "This really doesn't sound like something a large number of people are going to use. The market would have to apply to a broad range of businesses on a cost-justifiable basis to serve as



the magic bullet for the ISDN marketplace."

According to a Teles spokesman, the company is predicting that telemarketing and teleservices are niche markets in which the device will be most strongly deployed. There are currently 22 IBM business partners building AS/400-based telephony applications, he said.

The IRX9000 connects to the AS/400 via a proprietary 4M bit/sec. Token-Ring Interface Unit. Software options reportedly include a multipoint bridging capa-

bility via the interface unit, which enables users to interconnect Token-Ring local-area networks from multiple locations using ISDN.

Access to Callpath/400 services is provided through Systems Network Architecture LU6.2 sessions on the Token-Ring network, and AS/400 applications can access relevant data-base information and apply it to the intelligent routing of calls from or through the IRX9000. Calls are defined as data, image, audio or voice.

Product features include intelligent call routing capabilities and a key pad free-agent interaction function with which users can initiate all telephone commands from the computer terminal, eliminating the need to interact with the telephone keypad.

Scheduled for release in the first quarter of 1991, IRX9000 will range in price from \$45,000 to \$100,000, not including the AS/400 and AS/400 software.

## Fritz

FROM PAGE 41

Even stalwart AT&T has been rumored to have plans to drop out of the ISDN CPE market. Although AT&T Network Systems officials would not confirm or deny changes to future ISDN plans, rumors continue to fly at various conferences and trade shows.

While the possibility exists that this is just a market shake-out, some users are wondering if it signals the beginning of the end for ISDN technology.

Sluggish ISDN sales coupled with user uncertainty about ISDN's future has caused a depressed ISDN CPE market to sink even lower. From the vendors' point of view, there is little advantage to being the first on the block with ISDN equipment. Vendors can easily choose to sit on the sidelines and watch the field. If significant ISDN activity develops later on, they can always reenter the market.

Do vendor departments mean that ISDN is about to become a dead issue? Probably not. Major players, such as AT&T, Northern Telecom and Siemens, have too large an investment in ISDN to stand around and watch it die. However, careful attention must be applied — and soon — to the problem of the lapsed CPE market. There are ways of injecting new life into ISDN CPE sales, but it will take some quick action on the part of the vendors, local telephone carriers and users.

Vendors need to reconsider their pricing structure. Charging \$1,500 for an ISDN communications device is not likely to produce a flood of orders. Right or wrong, users say they expect ISDN data equipment to be priced no higher than a top-of-the-line modem, which translates to slightly over \$600.

Similarly, \$600 is viewed as an exorbitant price for what most users consider to be a

switching equipment.

Without subsidization, many of the telecommunications services we enjoy today would never have been given a chance to survive. Therefore, the state public service commissions must be made to understand that ISDN is a unique, new service. The commissions must give consideration to the special treatment that is required if ISDN is to prosper. Most impor-

**T**HERE ARE WAYS of injecting new life into ISDN customer premises equipment sales, but it will take some quick action on the part of the vendors, local telephone carriers and users.

telephone. Vendors argue that with its voice features and data capabilities, an ISDN desk set is not comparable to an analog telephone. Unfortunately, most users are simply not listening. The current perception is that ISDN vendors want too much money for a telephone. In the final analysis, however, it is user perception, not necessarily the facts, that will count.

The cure does not rest only on the vendors' shoulders. Local telephone carriers and users must change their perceptions toward ISDN service. Users must be prepared to go a little further out on the limb with their ISDN deployment plans. Carriers must recognize that it may be possible to achieve an immediate payback for their substantial investments in ISDN

switching equipment. tantly, the local carriers must be allowed to price ISDN lines to sell.

The fact is, ISDN will not prosper until it is viewed as essential to continued corporate growth. Therefore, the design and implementation of cost-effective applications unique to ISDN is very important. It is these unique applications that will, more than anything else, create the desire for customers to purchase ISDN CPE and lines.

Once that happens, ISDN will finally be considered an essential service offering enhanced connectivity at a reduced cost.

Fritz is a data communications analyst at West Virginia University in Morgantown, W. Va.

## BIT BLAST

# Vendors plan for Interop conference

Thirteen hardware, software and chip vendors will participate in an Open Network Computing interoperability demonstration at the Interop '90 Conference Exhibition, Oct. 8-12 in San Jose, Calif., according to Interop, Inc., the show's sponsor. Among the participants will be 3Com Corp., Auspex Systems, Inc., Netview, Inc., Novell, Inc., Sequent Computer Systems, Inc., Sun Microsystems, Inc. and AT&T subsidiary Unix Systems Laboratories, Inc.

Northern Telecom, Inc. has developed a frame-relay interface to its DMS 100 and DMS 250 Supermode central office switches providing local and interexchange carriers with the basis for virtual private data networks that can deliver to users on demand bandwidth of up to 1.5M bit/sec. over dial-up lines, according to Northern Telecom. The twisted-pair connections reportedly support up to 1,000 concurrent data sessions. Total capacity for the new trunk is up to 45M bit/sec., the vendor said.

New York Telephone is testing a system that is said to allow travelers to dial up stock prices or make hotel or plane reservations on public computer terminals at John F. Kennedy International

Airport. The terminals give customers access to 150 different travel, financial, entertainment and information services through New York Telephone parent Nynex Corp.'s Info-Link Gateway Services.

Westinghouse Communications is implementing a CCITT X.400-compliant electronic mail network to support international communications among various business units of parent company Western Electric Corp., customers, suppliers and other subscribers to Westinghouse's corporate mail service. The mail service will deliver mail to users of IBM's Professional Office System and Digital Equipment Corp.'s Vaxmail in the proprietary systems' own formats, the Westinghouse subsidiary said. More than 13,000 users are on the system now, with 8,000 to be added soon.

Nynex and San Microsystems, Inc. are jointly developing a multimedia information and communications system that is said to permit the storage, processing and transmission of voice, data and video and image. The system, which has already been demonstrated, now includes an interface to Probit, a physician's practice management system.

## Netware

FROM PAGE 41

Southern California Edison, Toshiba America, Hughes Aircraft Co., Grumman Corp. and Fluor Corp.

"We meet informally," said Bill Lawrence, network engineer in Edison's nuclear power generation department. "That's kind of how we've always gotten our support — informally." Lawrence said group members pick each others' brains for tips and answers. He added that he could support an on-line database, possibly as an extension of Novell's Netware bulletin board on CompuServe.

Glen Kauffman at University of California, Irvine said he agreed with users supporting users, even if it does not directly benefit his organization. Kauffman said the management of the university's college of medicine.

He said that as part of the

hoc Southern California group, he often feels more like a resource because corporations are still mulling local-area networks while the University of California campuses are already tackling wide-area networking. Nevertheless, Kauffman said, such groups and similarly structured databases are important. He suggested loosely modeling a new database after Microsoft Corp.'s Knowledge Base.

Diane Norris, computer administration assistant at Tokiko America, an automobile equipment aftermarket manufacturer in Torrance, Calif., said she sees a need for a database administered both by users and Novell to combine practical experience with nationwide coordination.

Goodyear emphasized that many questions remain unanswered, such as who would administer the database. But he expressed optimism that a formal announcement on the matter could come soon after Networld '90 Dallas next month.



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\*PC WEEK, May 7, 1990. \*\*Direct LocalTalk connections dependent on NetWare 386 VLM that file, 1990. Macintosh connection achieved only via standard bridges.

# SNMP-based tools ready for show

BY ELLIS BOOKER  
CIVILIAN

Although Interop '90 is still a month away, vendors of network management systems that use the Simple Network Management Protocol (SNMP) standard are already showing products.

At a recent Interop '90 "pre-staging" event in Buxton, Mass., FTP Software, Inc. demonstrated SNMP Tools, its \$300 SNMP-based network management product for personal computers. FTP is one of 50 vendors expected to attend the Oct. 8-12 Interop '90 in San Jose, Calif.

The Wakefield, Mass., developer already has a Transmission Control Protocol/Internet Protocol (TCP/IP) system for MS-DOS personal computers, PC/TCP, which was introduced in April 1986.

SNMP Tools uses the PC/TCP kernel and can therefore use Ethernet, Starlan, 802.5 and token-ring networks, the company said.

In addition, FTP announced that it had enhanced the basic SNMP protocol and that its product contains graphing and monitoring features such as the ability to display a color bar graph of one or more SNMP

variables. The software also converts the SNMP syntax into more easily understood messages, FTP said.

As early user of the FTP product is Sean Welch, president of Xenocom, Inc., another developer of SNMP.

"It was a real joy to develop in the FTP environment," said Welch, whose Wingham, N.H.-based company used the SNMP Tools developer kit to create an

**S**SNMP Tools uses the PC/TCP kernel and can therefore use Ethernet, Starlan, 802.5 and token-ring networks.

SNMP-based, end-user application that works in conjunction with Novell, Inc.'s own Lantern network monitor.

Dubbed Argus, the software will be previewed at this month's National '90 exposition in Dallas.

Xenocom is also using FTP's developer kit for a second product, a front end that would allow a network manager to gather management reports from multi-vendor, SNMP-based networks. Because vendors of SNMP-based systems have extended

the management information base (MIB) — the object database defined by the SNMP standard — users require different monitors to gather performance data and other information from the network devices of different vendors.

"We're trying to develop an umbrella product, a list of objects," said Welch, adding that he is going to SNMP vendors in order to get the details on their

MIB extensions.

"The hardest thing is to get the vendors to cooperate. They hold the key," said Welch, who hopes to have a product ready by December.

SNMP Tools runs on IBM Personal Computer/ATs, Personal System/2s or compatibles running DOS Version 3.1 or higher.

Current FTP customers who already have PC/TCP for DOS can purchase an add-on version of SNMP Tools for \$100, the company said.

## LaSalle

FROM PAGE 41

manager Gregory Brunks. In addition, the system reportedly slowed down as soon as it had to handle multiple applications of any significant size. It also lacked drivers to access many mainframe applications, according to Brunks.

LaSalle now leans toward OS/2, which has built-in support for IBM 3270 connections, "more advanced multitasking" than Windows and lacks DOS memory problems, Brunks said.

Another crucial question that now confronts LaSalle's IS group is which type of system provides the most cost-effective resource sharing for just a few users: a PC LAN or "a \$12,000 Unix workstation with three terminals," Brunks asked. The firm is likely to use OS/2 LANs for many of its corporate sites but still will use multi-user systems for smaller sites, including the majority of the real estate properties that LaSalle manages, Jones said.

One issue Jones' group is still struggling with is how to ensure that critical applications get the same level of support from the PC-based vendors that they employed from mainframe vendors, Jones said.

"In the mainframe environment, you get instant support with an 800 number; we're used to that," Jones said. By contrast, certain PC vendors have engaged Jones' people in games of telephone tag that lasted three days. Also, a value-added reseller's support for two existing Novell, Inc. LANs has been "terrible," he added.

The whole subject of LAN inter-networking is a thorny one at LaSalle. One reason is that the \$3,500 price tag of IBM Token-Ring bridges that are currently available is prohibitive for linking small work groups, Jones said, although an upcoming PC software-based bridge should alleviate this.

Inter-group data sharing is currently minimal across different LaSalle business groups, "although people may want to share tools and information on a limited basis," Jones said.

LaSalle's IS department said it hopes to decide by year end how to set up its distributed computing platforms, how to parcel out applications among IBM, multiuser systems and mainframes and what products to buy in the key areas, Jones said. "We want it locked down so we can sell it to the management committee by late November or early December — in time for the budget process."

## NEW PRODUCTS

### Local-area networking hardware

Microtest, Inc. has announced the release of Lanport-II, a self-contained remote network access device that reportedly allows users to log in to a Novell, Inc. network from an IBM Personal Computer, Apple Computer, Inc. Macintosh or laptop.

Users can log in from home, a hotel or a remote office without upload or download network files, print documents or send messages to other network users.

A dial-out capability provides users of any workstation with access to on-line information services, electronic mail systems or remote computers.

The product works on Novell Ethernet-based networks and costs \$695, according to the company.

Microtest  
3519 E. Shea Blvd.  
Phoenix, Ariz. 85028  
(602) 971-6464

National Semiconductor Corp.'s computer enhancement group has introduced two products to its Ethernet family of Ethernet adapter cards.

Ethernode 16 is a 16-bit Apple board for all models of the Apple Computer, Inc. Macintosh II series and is priced at \$495.

Ethernode 32 SE/30 is a 32-bit direct-memory access board for the Macintosh SE/30 processor direct slot and costs \$595.

Both boards include software drivers that are compatible with Apple's EtherTalk. National Semiconductor P.O. Box 58090  
2900 Semiconductor Drive  
Santa Clara, Calif. 95052  
(408) 721-5149

### Network management

Viracide, a software package from Parsons Technology, Inc., reportedly detects and destroys known computer viruses and restores most infected programs.

The software takes less than one minute to operate and requires an IBM Personal Computer XT, AT or compatible, 256K bytes of random-access memory and MS-DOS 2.0 or higher.

Viracide is priced at \$49. Parsons Technology  
375 Collins Road NE  
Cedar Rapids, Iowa 52402  
(319) 395-9626

### Gateways/Bridges/Routers

Network Software Associates, Inc. (NSA) has announced the NSA DSDC Artic Subsystem, a software package designed to

work with a real-time interface coprocessor card to improve performance of the company's Adaptax family of personal computer-to-host and local-area network-to-host connectivity products.

The subsystem can be used with Adaptax LAN gateway, Adaptax Controller and Version 4.2 or higher of the Adaptax family of stand-alone emulators for IBM Personal Computer ATs, XTs, Personal System/2s, laptops and compatibles. It is priced at \$495.

NSA  
39 Argonaut  
Laguna Hills, Calif. 92656  
(714) 768-4013

Zenith Communications Products has announced a modular network communications system designed to provide interconnectivity among Ethernet, token-ring and wide-area networks.

Galaxy Exchange supports twisted-pair, fiber-optic, broadband and baseband coaxial media, as well as Ethernet and token-ring protocols within the same enclosure, the vendor said. It can be configured with up to four different network interface modules.

The product is priced at \$4,995, and individual interface modules range from \$395 to \$4,300.

Zenith  
1000 Milwaukee Ave.  
Glenview, Ill. 60025  
(708) 391-8000

Advanced Computer Communications has introduced a front-end processor designed for Digital Equipment Corp. workstations that support the small computer systems interface standard.

The ACP 3250 can be used to route X.25 network traffic via a programmer's interface, Transmission Control Protocol/Internet Protocol (TCP/IP) and X.29 interfaces. When used under TCP/IP, the device enables a designated workstation to control wide-area network routing, the vendor said.

The product is priced at \$5,250.  
ACC  
720 Santa Barbara St.  
Santa Barbara, Calif.  
93101  
(805) 963-9431



The ACP 3250 can route X.25 network traffic.

Newport Systems Solutions, Inc. has added a data compression feature to a version of its LANi family of local-area network routers.

The LANi LAN/Compression Router enables users to achieve an average compression ratio of 4:1 and increase the throughput

of their communications lines while increasing line speed. It can be used in Novell, Inc. Netware-based external and internal configurations.

The product, scheduled to ship this month, costs \$4,195 for a two-port node and \$7,795 for a kit containing two nodes. Newport Systems Solutions  
4020 Birch St.  
Newport Beach, Calif.  
92660  
(800) 662-4677

### Local-area networking software

Visioview Software, Inc. has announced a software package designed to convert a local personal computer workstation into a dialless local-area network workstation.

Visioview enables network managers to prevent pinpoints, unauthorized use of modems and introduction of viruses from a local workstation.

The product requires Novell, Inc. Netware Version 2.0A or higher and an IBM Personal Computer XT, AT or Industry Standard Architecture-compatible workstation operating under MS-DOS or PC-DOS Version 3.0 or higher. It is priced at \$279.

Visioview Software  
21620 N. 19th Ave.  
Phoenix, Ariz. 85027  
(602) 581-6880



# MANAGER'S JOURNAL

## EXECUTIVE TRACK



Roger W. Brust has been promoted to assistant vice-president of application systems at Broadcast Music, Inc., a New York-based clearinghouse for performers' rights and royalties for 100,000 songwriters and publishers.

Brust joined Broadcast Music's application systems staff in 1989 as director. Prior to that, he worked as a consultant at Consulting Connections, Inc., where he designed and implemented a turnkey communications network for the city of New York. He was previously vice-president of data center operations and corporate trust applications at Manufacturers Hanover Trust Co.

Brust holds a bachelor of science degree in computer technology from the New York University of Technology.

Joseph J. Catino has been named information center manager in the MIS department at the Massachusetts Water Resources Authority in Boston. He is responsible for microcomputer support, office systems and the user help desk.

Catino previously owned a small consulting firm that maintained company financial records and negotiated vendor contracts.

Before that, he was director of the IS and administration department at the National Fire Protection Association and a clerk at the Bank of New England. Catino holds a bachelor's degree from Massachusetts Bay Community College.

### Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

## Matchmakers in manufacturing

Eastwood brings together experience and opportunity to make Motorola 'best in class'

BY ELISABETH HORWITT  
CHICAGO

**A**t a computer-integrated manufacturing conference one year ago, Motorola, Inc.'s Peggy Eastwood cautioned a packed room of vendors and users about the perils of automation for its own sake.

"If one factory seems flawless, if it gets things out on time with low margins and only has one Macintosh, then why buy it a \$100,000 package and a \$400,000 computer system?" asked Eastwood, who had recently been appointed corporate director of manufacturing systems at Motorola. On the other hand, she pointed out, it is also a big mistake to bring in expensive computer systems "to compensate for sloppy management practices."

Eastwood's 16-person department at Motorola's Schaumburg, Ill., headquarters was created in 1989 "for the purpose of accelerating Motorola's move into manufacturing automation and computer integration," as part of a corporate initiative "to be best in class in manufacturing," says Mauro Walker, vice-president and corporate director of manufacturing systems.

The manufacturing systems department uses several strategies to ensure system quality and minimize development and implementation time, and most of them would come under the heading of "personal networking." Eastwood and her people act as matchmakers between one group that needs a particular technology or application, and another group that has successful



Motorola's Eastwood: Pricky systems won't compensate for sloppy management

ly implemented that technology.

For example, Eastwood's department helped one group find ways to reduce work-in-process by taking it around to other groups at Motorola that had already reduced their own work-in-process, she says.

Eastwood and her staff also actively search out examples of successful technology implementation at other companies, "since almost every place exists at something," she says. Her department seeks out "things like just-in-time inventory, focused production lines or effective utilization of human

resources in a highly automated environment," she says.

The company's recent performance attests to the effectiveness of this strategy. Motorola was the first winner of the Malcolm Baldrige Quality Award. It has also gained industry attention for its 6 Sigma Quality Program, whose long-term goal is to achieve near-defectless manufacturing at all Motorola business units by 1992.

Motorola's key initiatives are already "uppermost in everyone's minds as they consider projects which could

Continued on page 52

## Corning TV stays alive with CIM

BY MITCH BETTS  
CHICAGO

**I**n the 1960s, back when U.S. companies still made color television sets, Corning, Inc. had five plants churning out the glass TV tubes. By 1983, however, intense foreign competition had knocked out all but one of those plants, and even that one was in doubt.

In 1985, faced with a decision to either fight or abandon the market entirely, Corning executives opted to harness the power of computer-integrated manufacturing (CIM) and revitalize the remaining factory in State College, Pa.

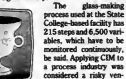
It worked. The aggressive implementation of CIM, as well as total quality control and just-in-time principles resulted in manufacturing costs that are now 22% lower than they were in 1985. Measures of product quality and manufacturing yields are way up, and product development time has been cut in half.

The bottom-line result is that the 1989 gross margin for the unit, Corning Asahi Video Products Co., is three times greater than in 1985, according to CIM project manager Jack L. Fulton.

In recognition of the company's "leading-edge CIM installation, resulting in significant productivity gains," the Society of Manufacturing Engineers has named Corning Asahi Video as the 1990 recipient of its prestigious Industry Lead Award.

Plant manager Mark H. Mitchell said that the CIM project helped the company to "stave off the capture of our market by imports." He attributed the success to "what we call a partnership in the workplace, which means we provide our employees with the best technology available, then we empower them to think through the best way to get the job done."

The plant uses CIM to integrate all accounting, ordering and billing procedures, as well as engineering and design functions. One of the biggest challenges, Fulton said, was applying CIM to the very complex processes used in glass making.



The glass-making process used at the State College-based facility has 215 steps and 6,500 variables, which have to be monitored continuously, he said. Applying CIM to a process industry was considered a risky venture, according to Fulton, but key executives vowed to be pioneers.

The company — a Corning subsidiary that is 39% owned by Asahi Glass Co. in Japan — will receive its award at the Autofact Conference in Detroit on Nov. 12.

At the same time, Arizona State University will receive an award for its CIM curriculum and research.

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## CLIPS



The Lens

Summaries from leading scientific and management journals

### Sloan Management Review

Summer 1990

**"The new industrial engineering: Information technology and business process redesign"**

By Thomas H. Davenport and James E. Short

Information technology organizations can play a key role in the redesign of business processes. They can convince senior management of the power of redesigning processes using information technology, absorb the new skills that redesign calls for and develop an approach or methodology for redesign.

Redesigning business processes involves a five-step approach: 1) developing

the business vision and process objectives 2) identifying processes to be redesigned 3) understanding and measuring the processes 4) identifying the relevant information technologies and 5) designing and building prototype processes, perhaps using computer-aided software engineering tools.

Only a few firms have ventured into this area. One of these is Rank Xerox UK, a national operating company of Xerox Corp. The areas Rank Xerox targeted for redesign include customer-order life cycle, customer satisfaction, installed equipment management, integrated planning, logistics, financial management and personnel management.

As it restructured its business processes, Rank Xerox's financial perfor-

mance has improved. Revenue grew 20%, delivery time was reduced from 33 days to six days, and jobs not related to customers decreased from 1,100 to 800.

### University of Minnesota MIS Research Center Working paper — May 1990

**"The changing role of telecommunications technologies in the workplace: E-mail, voice mail and fax"**

By Detmar W. Straub and Elena Karahanna

A survey of 100 users of the electronic mail system at a large transportation company confirmed that E-mail made communications among co-workers more efficient (especially for urgent messages), reduced paper-based correspondence and improved the decision-making process. Users felt that face-to-face meetings were more effective as a result of pre-meeting sharing of information through E-mail.

E-mail has also had an effect on social interaction at the corporation. It is used for social greetings, charity rallies and even for "calendar browsing." The company allows its staff to browse through the electronic calendars of co-workers to schedule meetings — a practice that could also be a source of gossip and determine political alliances.

As for company politics, one user noted: "People who are not on E-mail occasionally get left out of things."

### MIT Sloan School Center for Information Systems Research Working paper — May 1990

**"Strategies for electronic integration: Lessons from electronic filing of tax returns"**

By N. Venkatraman and Agit Kambh

Tax return preparation is information-intensive, yet computer technology has traditionally been used strictly behind the scenes. One of the reasons for this lack of information technology is that the tax business is seasonal, making cost justification of computer-related expenses somewhat tricky.

In the near future, however, information technology will be the major differentiating factor in the tax services market. Electronic filing is growing at a much quicker clip than the market for straight return preparation, in part because there are more opportunities for players in the filing market to promote services other than simple electronic filing.

The concept of "instant refund" will be a strong draw to people anxious to get their money back as soon as possible. For example, a bank could issue a refund anticipation loan to the filer in the amount of the refund due and then arrange to have the Internal Revenue Service make a direct deposit into the bank's account.

Financial institutions will also exploit the information content in the tax returns of consenting customers to develop new targets for investment packages. Taxpayers who feel comfortable filing electronically may also trust their filers to capture information about them in order to provide value-added services, such as ways to reduce next year's tax liabilities.

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## Eastwood

FROM PAGE 47

include a change to their systems," Eastwood says. "They ask themselves, 'Will it improve product quality, reduce cycle time or contribute to customer satisfaction?' When they look at it in that light, the issue is not what brand of robot to buy but how the technology will further those goals."

Eastwood's group has the job of ensuring that those key corporate initiatives are applied to the systems development process itself—especially to support Motorola's product introductions in such competitive, fast-paced markets as semiconductors and cellular telephones. "Motorola clearly was involved in CIM and automation long before I came, but there is an increasing need to get those systems out quicker," she says.

It is common at Motorola to send managers or engineers from anywhere in the world to work for one to five months with a group that has mastered the technology that they are interested in.

"It gives them a chance to get firsthand experience with someone else at Motorola, so they can duplicate and improve on the

technology," Eastwood says.

For example, when one group at Motorola wanted to expand its robot automation, it sent an engineer to work with Eastwood's staff to build 14 robot stations for the project.

Eastwood herself is apparently the fulcrum of her department's outreach efforts. "She's tough to keep up with," admits Robert Rush, a member of Eastwood's technical staff. "At others, MIS is very much to be more aggressive, not to hold back. She knows more people in Motorola than you would expect for the amount of time she has been here, and she can always come up with a simile when we need one."

One of the department's first jobs was to compile an information base—on "some on paper, some electronic"—that tracks various projects going on at Motorola, "so everyone can see who is using what software package or working on a robot application of this type," she says.

The department has also compiled a database of "different people around the company who are technical experts in a topic," Eastwood says. It is also in the process of organizing forums where organizations can talk firsthand about success stories and lessons learned on projects,"

she adds.

The group can also act as a project coordinator that brings together cross-functional teams typically composed of people from engineering, manufacturing, financial and human resources, Eastwood says. Information Systems' level of involvement depends on the project and the group.

"Some of our groups don't have MIS per se," Eastwood says. "At others, MIS is very much on the factory floor. At still others, it is concentrated in the back room."

Getting the different departments involved ensures that conflicting priorities are identified and resolved. "Sometimes the original idea would make the software very complex, but someone is able to say, 'We don't really need that,'" Eastwood says.

One goal that Eastwood is currently focusing on is "closer involvement with Asian and European factories. Some non-U.S. facilities have real centers of excellence in areas that have received less attention in the U.S., so there is potential for a two-way contribution," she says. For example, some Pacific Rim factories "are especially in tune with ways to minimize manufacturing cost," Eastwood says.

## Retaining focus

**P**eggy Eastwood's job history made her uniquely suited to the position of corporate director of manufacturing systems at Motorola. She has been involved in computer-integrated manufacturing and automation in all of her employment positions since she obtained her Ph.D. in computer science from Washington University in St. Louis.

Eastwood's first job was at RCA Space Center and involved working on software programs needed to support production of circuit boards and automated testing devices.

At McDonnell Douglas Corp. in St. Louis, she "got into robotics," she says. While there, she also got involved with the U.S. Air Force's Integrated Computer-Aided Manufacturing program, which was an early attempt to "seriously look at the real potential behind CAM and CIM in the factory," Eastwood says.

The Air Force project gave Eastwood the focus she says she has retained ever since, "always looking at things from a broad perspective, always stressing the architecture and integration rather than islands."

Although manufacturing companies and vendors have been vaulting the idea of CIM for a decade, the concept "was a big deal in 1975 to 1976" when Eastwood first became interested in it, she says.

Nevertheless, Eastwood still finds that "the biggest challenge to my job is the scope." In addition to keeping abreast of the latest developments in computer, automation and management systems, Eastwood must stay in touch with all of Motorola's businesses, she points out.

"There are so many things to tackle and concentrate on, so picking which areas to focus on can be tough," she says.

ELISABETH HORWITZ

## CALENDAR

The Association for Systems Management (ASM) will present a two-day systems development seminar led by James Wetherde, director of the MIS Research Center at the University of Minnesota. "Systems Development: Agenda for the 1990s" will be held at the Hotel Nikko in San Francisco Oct. 4-5 and repeated at the Park Plaza in Toronto Oct. 11-12.

Wetherde, publisher of *MIS Quarterly* and the author of 12 books, will address topics including identifying strategic applications, reducing cycle time and backlog, overcoming resistance to change and getting systems requirements right the first time.

For more information, contact ASM at (216) 243-6900.

### SEPTEMBER 23-29

Networking/Video '90, Atlanta, Sept. 24-25. Contact: Sue Fendley, Informa, Inc. (404) 259-2731.

The Expanding Glass House of the '90s, Toronto, Oct. 24-28. Contact: Meta Group, Westport, Conn. (203) 226-6382.

PC Expo, Chicago, Sept. 25-27. Contact: R.A. Brown, Inc., Englewood Cliffs, N.J. (201) 689-6542.

MAA World Conference '82, Digital, Los Angeles, Sept. 25-27. Contact: Digital Consulting, Andover, Mass. (508) 475-3880.

The Intelligent Corporation Conference, New York, Sept. 28. Contact: The Bull Street Forum, New York, N.Y. (212) 725-4555.

Shaping the Global Forces of Change: Strategies for Corporate Success in the '90s, Fort Collins, Colo., Sept. 27. Contact: Macro Technology University, Fort Collins, Colo. (944) 454-0565.

Portable Computing and Communications: Specialization and Conferences, New York, Sept. 27. Contact: Michael Salomon, DGC Conference Management Group, Framingham, Mass. (508) 225-4696.

Operations Manager Conference, Los Angeles, Sept. 27-28. Contact: Jerry LeBlanc, Personnel, N.J. (201) 438-2491.

SEPTEMBER 30 OCT 6

Summiting from Systems Integration, New York, Sept. 30-Oct. 3. Contact: Alamy Chalko, CMP Conference Group, Manhattan, N.Y. (212) 945-5717.

Venue Publishing Seminar, San Jose, Calif., Sept. 30-Oct. 2. Contact: Bob Mundy, VPUS (408) 227-5638.

Development Center Institute Fall Conference, Indianapolis, Sept. 30-Oct. 3. Contact: Development Center, Indianapolis, Ind. (317) 846-2753.

Information Industry Association's Annual Convention & Exhibition, Boston, Sept. 30-Oct. 3. Contact: IIA, Washington, D.C. (202) 639-8262.

Control, Audit and Security Conference, Atlanta, Sept. 30-Oct. 4. Contact: The Bull Street Forum, New York, N.Y. (212) 725-4555.

NOV/PRO Personal Skills, Burlington, Mass., Oct. 1-2. Contact: State-of-the-Art Prog. Group, Northampton University, Dedham, Mass. (617) 329-8955.

AI/600 Technical Conference, Niles

Headland, S.C., Oct. 1-3. Contact: AS/600 Technical Conference, Warrenton, S.C. (800) 552-9404.

Effective Methods for Information Systems: Quality Assurance, Orlando, Fla., Oct. 1-3. Contact: Quality Assurance Institute, Orlando, Fla. (407) 265-1111.

Information Industry Association Conference, Phoenix, Oct. 1-3. Contact: Ashley Perini, Group Group, Stamford, Conn. (203) 964-6996.

Information Technology Conference & Exposition, San Diego, Oct. 1-3. Contact: Data Processing Management Society, Park Ridge, Ill. (708) 625-8124.

National Computer Society Conference, Washington, D.C., Oct. 1-4. Contact: Twenty Group, National Institute of Standards and Technology, Gaithersburg, Md. (301) 975-2775.

SEVEN '90, Atlanta, Oct. 1-4. Contact: Am USA, Pittsburgh, Pa. (412) 963-8506.

CD-ROM Expo, Boston, Oct. 1-5. Contact: Dorsey Perrier, Inc., Englewood, Mass. (603) 225-4980.

Object-Oriented Systems Development, Washington, D.C., Oct. 1-5. Contact: Bureau Data Systems, Rockville, Md. (301) 765-1388.

United Systems Exposition and Conference, Anaheim, Calif., Oct. 3-5. Contact: The Interlink Group, Noida, Mass. (617) 449-6606.

Accessible Computer Technology Exhibit, Washington, D.C., Oct. 4. Contact: Alan Douglas, ACT 111, Washington, D.C. (703) 327-6644.

Pacific Northwest Systems Quality Conference, Portland, Ore., Oct. 7-9. Contact: Tami Moore, Pacific Agenda, Portland, Ore. (503) 223-8633.

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Nov. Developer Conference, Toledo, Ohio, Oct. 7-18. Contact: Fox Software, Perrysburg, Ohio (419) 874-6162.

Indusnet Electronic Show & Conference, Indianapolis, Oct. 8-12. Contact: Indusnet, Carmel, Ind. (317) 571-6482.

Systems Exposition and Conference, Alexandria, Va., Oct. 8-10. Contact: The American Public Communications Council of the North American Telecommunications Association, Washington, D.C. (202) 538-6282.

National Communications Forum, Chicago, Oct. 8-9. Contact: National Computer Network, Chicago, Ill. (312) 938-3500.

Southwestern Telecommunications Association Conference and Equipment Exposition, Miami Beach, Fla., Oct. 8-10. Contact: SETA, Columbia, S.C. (803) 731-5640.

Southwestern Telecommunications Association Conference and Equipment Exposition, New Orleans, Oct. 8-12. Contact: APICS, Falls Church, Va. (703) 237-6646.

Interlog '90, San Jose, Calif., Oct. 8-12. Contact: Interlog, Inc., Mountain View, Calif. (415) 941-2392 ext. 200.

CASJ World Conference and Exposition, Chicago, Oct. 9-11. Contact: Digital Consulting Group, Andover, Mass. (508) 476-3680.

Hardware '90, Seattle, Oct. 9-11. Contact: Norcross, Los Angeles, Calif. (213) 641-5117.

Access Information Systems in Government, Washington, D.C., Oct. 9-12. Contact: Conference Manager, USFSA, Inc., Silver Spring, Md. (301) 445-4400.

Computer Negotiations, New York, Oct. 10-11. Contact: International Computer Negotiations, Inc., Water Park, Pa. (407) 740-0790.

Imaging '90 Conference and Exposit-

ion, New York, Oct. 10-12. Contact: Michael Graczyk, BPS CAP International, New York, N.Y. (212) 665-6130.

Info '90, International Information Management Exposition & Conference, New York, Oct. 10-13. Contact: Calvert Exposition Group, Stamford, Conn. (203) 365-6477.

Microprocessor Forum, San Francisco, Oct. 10-11. Contact: Microprocessor Forum, San Francisco, Calif. (415) 862-4094.

Understanding and Implementing On-Line Simulation Processing, New Brunswick, N.J., Oct. 10-11. Contact: Jose Segle, Data-Tech Systems, Ciba, N.J. (201) 478-5400.

International ASIM/ASQ/BSR Conference on Information Reliability, Chicago, Oct. 13-18. Contact: Association for Computing Machinery, New York, N.Y. (212) 880-7446.

International Society for Hybrid Microelectronics (ISHM) Symposium on Advanced Microelectronics, Chicago, Oct. 13-17. Contact: ISHM, Boston, Va. (202) 252-4746.

NOVEMBER 14-20

Computer Services, Communications and Information Systems, Rochester, N.Y., Oct. 14-17. Contact: Serfati Inc., Aron Brown and Sons, Rochester, N.Y. (212) 777-1706.

Systems '90, Atlanta, Oct. 14-17. Contact: Edmund Pressman, N.J. (609) 550-3345.

International Systems Conference and Exposition, St. Louis, Oct. 14-17. Contact: NISMA, New York, N.Y. (212) 542-0113.

Data Entry Management Association Conference and Exposition, Las Vegas, Oct. 15-17. Contact: NISMA, New York, N.Y. (212) 542-0113.

Business '90, Boston, Mass., Oct. 15-18. Contact: Conference Management Corp., New York, Conn. (203) 852-0666.

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# The envelope, please...

*As IS execs compare pay stubs, jobs in the Big Apple and positions in securities get the big bucks*

BY ADAM A. LUTHELM  
OF STAFF

If you're a top information systems executive working in wholesale or retail trade in Arizona — congratulations. Your income is growing fast compared with the salaries of your colleagues in other industries. Factor in your low cost of living, and the numbers look even better.

When it comes to compensation, some IS professionals are gaining ground at a faster clip than others, according to *Computerworld's* fourth annual salary survey.

The variations do not just reflect industry conditions and geography. Compensation is rising faster for some positions than for others across the board. This year, pay for IS managers or supervisors reporting to the top IS executive is up 14% from the level reported last year. Meanwhile, compensation for communications specialists and database analysts — two groups much in demand in recent years — has risen only 3%.

The more than 1,500 IS organizations responding to the survey report an average departmentwide salary increase of 5.7% for this year. That compares with nationwide increases of 5.7% for all executives and 5.4% for all salaried employees, according to William M. Mercer, Inc., a compensation consulting firm in Deerfield, Ill. Meanwhile, the U.S. government's consumer price index, a measure of inflation, has risen 5.8% through July of this year.

Senior systems analysts, senior programmer/analysts and senior operating systems programmers also registered big gains since last year's survey, with compensation up about 10%. Laggards include database managers and administrators; they gained only 4%.

During the four years *Computerworld* has conducted its survey, top IS executives' salaries have jumped the most, rising 15.5% (see chart page 61). Senior systems analysts and senior programmer/analysts have done well over the four years, too, along with systems and programming managers. Data center shift supervisors and senior programmers have chafed up the smallest overall gains. Their salaries grew by less than 5%.

**Wanted: Communication skills**  
With the great value IS organizations now place on business knowledge and interpersonal skills, "pure" programmers tend to get salary increases that just keep up with the cost of living, says Richard Wooley, national director of the IS division at recruiting firm Robert Half International, Inc. Meanwhile, systems analysts — and programmers with the analytical and interpersonal skills expect-

ed of systems analysts — make more money.

"As time goes on, there'll be less need for pure back-room coders, because the trend in IS is toward end-user computing, decentralization and people who have business and technical skills," Wooley says.

The average salary for information center managers rose slightly this year after declining the last two years, but it re-

mains nearly \$1,000 below its 1987 level. Recruiters attribute the declines to a downgrading of the position; as information center managers moved on, they were succeeded by less experienced people.

This year's survey finds top IS executives — chief information officers, vice-presidents and IS directors — earning a total compensation of \$75,600. That is a fraction of what IS chiefs at the biggest

companies in the most competitive job markets make. However, it is a significant outlier for the survey's cross-section of small, medium and large companies across the U.S. "In a lot of communities, someone making \$70,000 is one of the wealthiest people," says Skip Tolette, an executive recruiter at Schmitt Bishop Tolette in New York.

The organizations responding to the survey report average revenues or assets of \$864 million. However, for three-fourths of the companies, that total is less than \$50 million. At the largest companies, those with revenues or assets greater than half a billion dollars — the compensation for top IS executives is 38% greater than the overall average (see chart this page).

The really big bucks in IS go to a smaller group of highly visible executives. Jay Gaisner, a New York executive recruiter, likens the arrangement to Hollywood's star system. "There's an awful lot of dollars chasing a handful of people," he says. "I think you have 50 top guys in the country who are on everybody's hit list." Only about 20 of them command pay of \$750,000 or more, Gaisner says. Individuals on Wall Street's major investment banking firms lead the list; there alone, six top IS executives make \$700,000 or more. (CW, Jan. 15).

## Big Apple, big bucks

This year's survey also finds top IS executives in New York making more money than their colleagues in other locations — a lot more. New Yorkers hold a 25% lead over their counterparts in Boston, home to top IS executives with the second biggest paychecks (see chart page 59).

The jobs in New York pay a healthy premium even after compensating for the high cost of living there (see chart page 59). One reason: There's a lot of competition for the best IS talent in New York. Another reason is that people demand a premium for working there. "It's a tougher place to get people to move to," Tolette says.

The regional ranking of pay for top IS executives does change when adjusted for variations in the cost of living. The Phoenix/Tucson area moves up the most after the adjustment — from seventh place to fourth. There's a strong demand for computer professionals in Arizona because the region has attracted a lot of software companies in recent years, says Dick Misque, director of U.S. cost-of-living services at Associates for International Research, Inc., a compensation consulting firm in Cambridge, Mass.

The regional variations in pay for top IS executives apply to smaller companies more than big corporations, recruiters say. Bigger corporations in the outlying regions compete with companies in big cities for top IS executives, so they have to pay as much as those companies do.

Continued on page 59

## AVERAGE TOTAL COMPENSATION BY COMPANY SIZE

	Revenue or assets			
	Total	Less than \$50M	\$50M to \$499M	More than \$500M
<b>IS MANAGEMENT</b>				
CIO/VP/Director of IS	\$75,611	\$61,348	\$76,207	\$104,801
IS manager/Supervisor	\$58,843	\$49,171	\$58,133	\$75,110
<b>END-USER SUPPORT</b>				
Manager, end-user computing	\$49,463	\$43,672	\$47,923	\$56,139
Information center manager	\$47,100	\$39,447	\$45,637	\$55,452
LAN manager	\$41,177	\$37,555	\$40,390	\$45,868
PC specialist	\$33,306	\$30,274	\$33,753	\$35,827
<b>COMMUNICATIONS</b>				
Network manager	\$50,493	\$40,086	\$48,526	\$58,610
Telecommunications manager	\$50,578	\$42,619	\$50,045	\$55,555
Communications specialist	\$38,231	\$37,309	\$36,664	\$40,971
<b>SYSTEMS AND PROGRAMMING</b>				
Systems and programming manager	\$56,159	\$50,314	\$54,661	\$64,547
Project manager	\$50,852	\$48,772	\$49,137	\$52,579
Senior systems analyst	\$45,609	\$44,990	\$44,411	\$47,967
Systems analyst	\$39,617	\$37,894	\$38,791	\$41,220
Senior programmer/Analyst	\$40,754	\$39,146	\$40,336	\$42,841
Programmer/Analyst	\$34,659	\$32,865	\$34,141	\$36,602
Senior programmer	\$34,631	\$35,029	\$34,768	\$34,377
Programmer	\$28,312	\$27,545	\$27,765	\$29,880
<b>TECHNICAL SERVICES AND OPERATIONS</b>				
Technical services manager	\$55,799	\$52,624	\$53,653	\$62,836
Senior operating systems programmer	\$47,886	\$47,122	\$46,012	\$51,271
Operating systems programmer	\$40,196	\$36,691	\$40,325	\$43,140
Data center or operations manager	\$42,878	\$36,637	\$41,773	\$50,889
Data center shift supervisor	\$30,926	\$26,596	\$29,700	\$35,462
<b>DATABASE GROUP</b>				
Database manager/Administrator	\$50,938	\$43,946	\$48,892	\$57,270
Database analyst	\$42,561	\$38,972	\$42,367	\$45,275

# East or West, New York is best

AVERAGE TOTAL COMPENSATION BY REGION (SALARIES PLUS BONUSES)

	Total	Atlanta	Washington, D.C.	Boston	Chicago	Texas	Denver	Florida	Detroit	Southern California	Minneapolis	New York	Northern California	Arizona	Oregon/Wash.
<b>IT MANAGER GROUP</b>															
CIO/VP/ Director of IS	\$75,611	\$69,452	\$79,368	\$82,786	\$80,864	\$81,153	\$64,612	\$69,101	\$70,296	\$79,246	\$71,456	\$104,000	\$82,077	\$69,295	\$67,606
IS manager/ Supervisor	\$58,843	\$56,843	\$60,381	\$66,950	\$62,920	\$63,318	\$55,481	\$51,754	\$57,160	\$61,679	\$57,841	\$78,623	\$61,919	\$50,333	\$53,154
Manager, end-user computing	\$49,463	\$42,000	\$51,304	\$47,075	\$49,000	\$55,900	\$43,680	\$47,265	\$45,225	\$49,267	\$47,546	\$61,725	\$39,792	\$40,447	\$47,000
Information center manager	\$47,100	\$44,441	\$46,700	\$47,125	\$53,875	\$51,691	\$41,136	\$42,457	\$42,525	\$42,500	\$43,360	\$54,562	\$60,286	\$47,300	\$43,438
LAN manager	\$41,177	\$38,650	\$37,725	\$48,727	\$42,364	\$44,075	\$40,269	\$38,000	\$40,792	\$41,000	\$42,462	\$51,964	\$47,154	\$38,375	\$35,364
PC specialist	\$33,306	\$31,679	\$33,144	\$34,108	\$34,292	\$33,963	\$33,418	\$30,881	\$31,920	\$36,897	\$33,375	\$36,655	\$38,189	\$29,581	\$30,453
Network manager	\$50,493	\$44,083	\$50,838	\$61,230	\$50,000	\$53,528	\$45,025	\$49,656	\$47,600	\$48,143	\$44,500	\$67,643	\$51,893	\$47,231	\$47,947
Telecommunications manager	\$50,578	\$44,611	\$52,028	\$50,737	\$64,780	\$52,853	\$44,211	\$40,276	\$48,767	\$49,667	\$48,700	\$68,654	\$58,500	\$48,088	\$43,176
Communications specialist	\$38,231	\$36,654	\$39,792	\$38,950	\$40,806	\$38,476	\$37,667	\$32,136	\$42,271	\$40,533	\$39,678	\$49,250	\$39,675	\$34,700	\$34,482
<b>SYSTEMS PROGRAMMER GROUP</b>															
Systems and programming manager	\$56,159	\$52,713	\$60,070	\$57,776	\$54,336	\$59,537	\$51,398	\$51,845	\$54,806	\$56,407	\$51,266	\$70,236	\$62,279	\$52,665	\$51,416
Project manager	\$50,852	\$47,479	\$55,882	\$51,303	\$49,069	\$48,607	\$45,964	\$46,207	\$54,434	\$53,824	\$47,046	\$58,618	\$55,154	\$48,271	\$45,724
Senior systems analyst	\$45,669	\$45,179	\$49,561	\$45,614	\$44,395	\$47,467	\$44,426	\$42,697	\$41,624	\$48,286	\$42,713	\$52,694	\$51,732	\$43,205	\$42,143
Systems analyst	\$39,617	\$38,652	\$42,365	\$36,929	\$39,196	\$39,935	\$39,552	\$38,050	\$37,071	\$43,773	\$38,653	\$46,326	\$44,522	\$37,650	\$36,803
Senior programmer/Analyst	\$40,754	\$42,026	\$43,700	\$40,751	\$40,502	\$40,881	\$40,091	\$38,780	\$39,962	\$44,433	\$37,916	\$46,741	\$46,228	\$37,767	\$35,750
Programmer/Analyst	\$34,659	\$33,171	\$36,122	\$33,857	\$35,409	\$35,502	\$34,151	\$33,524	\$33,312	\$37,106	\$32,233	\$39,443	\$41,244	\$33,136	\$31,220
Senior programmer	\$34,631	\$34,318	\$36,109	\$35,300	\$34,025	\$32,357	\$33,642	\$34,860	\$32,889	\$35,571	\$32,000	\$37,220	\$43,929	\$33,607	\$29,531
Programmer	\$28,312	\$27,091	\$29,941	\$30,172	\$28,564	\$27,582	\$27,952	\$26,171	\$28,189	\$30,105	\$26,981	\$31,721	\$37,389	\$28,269	\$24,742
<b>TECHNICAL SERVICES AND OPERATIONS</b>															
Technical services manager	\$55,799	\$53,853	\$60,004	\$60,432	\$61,465	\$58,111	\$52,458	\$46,600	\$53,421	\$55,964	\$54,000	\$69,813	\$61,096	\$49,574	\$46,500
Senior operating systems programmer	\$47,886	\$47,167	\$49,548	\$46,472	\$46,718	\$53,248	\$43,548	\$43,467	\$47,021	\$52,815	\$45,896	\$62,125	\$55,075	\$45,961	\$42,482
Operating systems programmer	\$40,196	\$36,413	\$39,273	\$40,271	\$41,409	\$45,024	\$39,916	\$37,068	\$36,938	\$37,750	\$40,666	\$44,565	\$46,365	\$39,000	\$40,737
Data center or operations manager	\$42,876	\$37,624	\$45,687	\$44,713	\$49,897	\$43,198	\$40,158	\$38,444	\$41,522	\$39,519	\$45,041	\$52,769	\$48,231	\$38,933	\$39,976
Data center shift supervisor	\$30,926	\$27,269	\$31,383	\$30,257	\$32,728	\$30,797	\$30,252	\$29,878	\$30,362	\$29,067	\$31,732	\$36,167	\$38,162	\$27,572	\$29,828
<b>DATABASE GROUP</b>															
Database manager/Administrator	\$50,938	\$51,105	\$49,902	\$51,083	\$53,990	\$52,350	\$50,762	\$46,500	\$46,857	\$44,538	\$53,139	\$68,067	\$55,063	\$49,357	\$44,437
Database analyst	\$42,561	\$38,687	\$45,028	\$43,300	\$43,200	\$40,800	\$42,682	\$38,923	\$40,833	\$44,786	\$44,850	\$52,160	\$51,636	\$39,409	\$38,325

**The real payoff**

Top IS executives in New York lead in compensation even after adjusting income for the cost of living. Top executives in Arizona make the biggest move up the ladder with the adjustment

**1. New York**

Total compensation	\$104,000
Cost-of-living index	108.9
Adjusted compensation	\$95,500*

**2. Dallas/Houston**

Total compensation	\$81,153
Cost-of-living index	98.8
Adjusted compensation	\$82,139*

**3. Chicago**

Total compensation	\$80,864
Cost-of-living index	101.8
Adjusted compensation	\$79,434*

**4. Boston**

Total compensation	\$82,786
Cost-of-living index	104.5
Adjusted compensation	\$79,221*

**5. Baltimore/Washington, D.C.**

Total compensation	\$79,368
Cost-of-living index	102.0
Adjusted compensation	\$77,812*

**6. Northern California**

Total compensation	\$82,077
Cost-of-living index	109.1
Adjusted compensation	\$75,231*

**7. Phoenix/Tucson**

Total compensation	\$69,295
Cost-of-living index	92.8
Adjusted compensation	\$74,671*

**8. Los Angeles/San Diego**

Total compensation	\$79,246
Cost-of-living index	107.7
Adjusted compensation	\$73,580*

**9. Atlanta**

Total compensation	\$69,452
Cost-of-living index	94.7
Adjusted compensation	\$73,339*

**10. Minneapolis/St. Paul**

Total compensation	\$71,456
Cost-of-living index	96.1
Adjusted compensation	\$72,840*

**11. Miami/Tampa/Orlando**

Total compensation	\$89,101
Cost-of-living index	97.1
Adjusted compensation	\$71,165*

**12. Detroit**

Total compensation	\$70,296
Cost-of-living index	96.8
Adjusted compensation	\$71,150*

**13. Seattle/Portland/Spokane**

Total compensation	\$67,606
Cost-of-living index	95.8
Adjusted compensation	\$70,570*

**14. Denver**

Total compensation	\$64,812
Cost-of-living index	95.3
Adjusted compensation	\$67,798*

\*Compensation divided by the cost index and multiplied by 100. Index derived by Association for International Research, Inc.

**Continued from page 57**

Since last year's survey, top IS executives in wholesale and retail trade have bettered their lot compared with their colleagues in other industries. In 1989, the pay for CIOs and vice-presidents of IS was lower in that industry than in all other fields except education and government. This year's survey puts top IS executives in wholesale and retail trade in fourth place — ahead of their counterparts in insurance, manufacturing and health care (see chart page 60).

Companies in wholesale and retail trade have been turning to information technology to handle crucial functions such as automating inventory control, says Bob Lemke, a consultant at the William M. Mercer office in Chicago. "They're having to buy talent to catch up to the changes other industries have already made," he says.

Meanwhile compensation in industries that traditionally have paid the most for IS talent — investment and commercial banking — are steady or dropping when bonuses are taken into account, recruiters say.

The big spender image of financial services also looks less certain when one looks at stock options, Gaines says. The options tend to be less valuable at service companies than in manufacturing concerns, where they can be worth \$100,000 or more for top-paying IS positions.

Programmers and analysts typically do not get stock options, but there is grow-

ing interest in paying them overtime for extra work, Lemke says. "I think the trend is to pay more straight-time overtime rather than comp time," he says. The reason? Companies believe the lure of overtime pay provides them with an edge in recruiting.

Experience in hot technical areas can also add to pay for programmers and analysts. According to Steve Joffe, a vice-president at recruiting firm Source Services Corp. in Paramus, N.J., the hot areas in applications development today include the following:

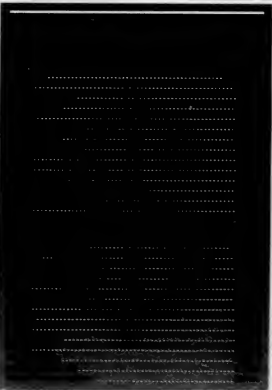
- Mainframe, on-line database systems, especially using IBM's DB2.

- Midrange systems using IBM's RPG III language or Digital Equipment Corp.'s VAX/VMS operating system, particularly with fourth-generation languages such as SQL, Oracle and Ingres.

- Personal computer systems incorporating relational databases and local-area networks, as well as Unix, C or Windows.

Experience with hot technologies can make up for a lack of business acumen or interpersonal skills and win programmers a healthy raise, Wonder says. He says he sees the need for RPG programmers following IBM's introduction of the Application System/400 minicomputer as the biggest change in the IS job market in the last year.

"Five or 10 years ago people almost looked down on RPG programmers," he says. "Now they're some of the most sought-after people around."



# Securities blanket

*IS chiefs in securities get top dollar,  
beat out utilities colleagues by \$3,000*

AVERAGE TOTAL COMPENSATION BY INDUSTRY (SALARIES PLUS BONUSES)

	Total	Banking	Insurance	Securities	Government	Wholesale/ Retail	Education	Utilities	Manufacturing	Health Care
CEO/VP/Director of IS	\$75,611	\$85,645	\$78,572	\$89,383	\$65,679	\$80,271	\$82,639	\$86,200	\$76,848	\$70,457
IS manager/Supervisor	\$58,843	\$65,603	\$58,400	\$66,554	\$55,047	\$60,891	\$55,576	\$64,073	\$58,465	\$53,963
Manager, end-user computing	\$49,463	\$53,384	\$50,875	\$52,309	\$50,161	\$46,114	\$44,047	\$59,053	\$50,694	\$44,500
Information center manager	\$47,100	\$48,808	\$55,500	\$54,143	\$44,400	\$47,150	\$42,939	\$52,950	\$47,958	\$41,333
LAN manager	\$41,177	\$43,533	\$41,464	\$37,650	\$40,940	\$36,575	\$42,058	\$44,184	\$41,848	\$39,417
PC specialist	\$33,306	\$31,684	\$33,922	\$33,717	\$33,574	\$32,768	\$30,464	\$35,533	\$34,056	\$32,634
Network manager	\$50,493	\$49,053	\$53,639	\$66,667	\$46,711	\$55,088	\$48,920	\$55,667	\$47,681	\$42,731
Telecommunications manager	\$50,578	\$50,675	\$55,269	\$68,136	\$47,092	\$52,771	\$46,452	\$55,147	\$49,509	\$45,400
Communications specialist	\$38,231	\$40,717	\$41,559	\$41,821	\$35,788	\$40,152	\$32,577	\$39,438	\$37,396	\$38,000
Systems and programming manager	\$56,159	\$62,970	\$56,286	\$61,871	\$51,884	\$55,381	\$53,773	\$61,962	\$55,229	\$52,712
Project manager	\$50,852	\$50,594	\$49,214	\$54,725	\$48,441	\$49,304	\$61,404	\$49,816	\$49,686	\$49,474
Senior systems analyst	\$45,069	\$47,148	\$45,912	\$46,271	\$45,465	\$46,648	\$41,531	\$45,513	\$44,954	\$42,393
Systems analyst	\$39,617	\$40,667	\$39,483	\$40,361	\$39,969	\$40,039	\$37,567	\$41,286	\$39,384	\$34,567
Senior programmer/ Analyst	\$40,754	\$40,544	\$40,656	\$40,756	\$41,410	\$41,519	\$38,789	\$40,713	\$40,631	\$38,995
Programmer/Analyst	\$34,659	\$33,659	\$33,054	\$33,688	\$35,750	\$34,536	\$33,649	\$35,952	\$34,840	\$32,055
Senior programmer	\$34,631	\$33,342	\$33,682	\$33,692	\$35,679	\$34,688	\$35,425	\$33,267	\$34,523	\$39,500
Programmer	\$28,312	\$27,200	\$26,874	\$28,000	\$28,745	\$28,732	\$26,829	\$28,586	\$28,531	\$25,979
Technical services manager	\$55,799	\$57,955	\$59,359	\$65,367	\$52,042	\$55,625	\$45,192	\$56,414	\$56,017	\$61,100
Senior operating systems programmer	\$47,886	\$47,552	\$46,857	\$58,769	\$46,012	\$47,397	\$42,672	\$48,318	\$48,310	\$45,584
Operating systems programmer	\$40,196	\$38,000	\$39,680	\$45,233	\$38,905	\$38,517	\$34,800	\$41,900	\$41,167	\$42,953
Data center or operations manager	\$42,878	\$45,100	\$42,640	\$47,740	\$41,627	\$38,138	\$40,379	\$49,417	\$42,827	\$42,095
Data center shift supervisor	\$30,926	\$32,214	\$30,332	\$32,659	\$33,512	\$29,089	\$28,385	\$33,973	\$29,060	\$28,849
Database manager/ Administrator	\$50,938	\$54,286	\$59,600	\$77,417	\$46,032	\$52,846	\$46,519	\$53,809	\$46,179	\$48,206
Database analyst	\$42,561	\$44,231	\$43,225	\$50,000	\$39,833	\$44,763	\$37,237	\$45,000	\$40,792	\$40,318



## AVERAGE SALARIES AND BONUSES

	Average annual salary	Average additional compensation	Average total compensation	Average years of IS experience
<b>IS MANAGEMENT</b>				
CEO/VP/Director of IS	\$66,690	\$8,581	\$75,611	16.0
IS manager/supervisor	\$55,236	\$4,734	\$58,843	13.0
<b>END-USERS SUPPORT</b>				
Manager, end-user computing	\$47,601	\$2,808	\$49,463	10.1
Information-center manager	\$45,179	\$2,650	\$47,100	10.2
LAN manager	\$39,970	\$1,999	\$41,177	6.6
PC specialist	\$32,321	\$1,451	\$33,306	5.1
<b>COMMUNICATIONS</b>				
Network manager	\$48,658	\$2,702	\$50,493	10.0
Telecommunications manager	\$48,611	\$2,749	\$50,378	10.6
Communications specialist	\$37,271	\$1,445	\$38,231	7.7
<b>SYSTEMS AND PROGRAMMING</b>				
Systems and programming manager	\$53,549	\$3,630	\$56,139	12.9
Project manager	\$49,345	\$2,246	\$50,852	10.8
Senior systems analyst	\$44,569	\$1,788	\$45,869	10.4
Systems analyst	\$38,525	\$1,782	\$39,617	7.4
Senior programmer/analyst	\$39,656	\$1,696	\$40,754	8.9
Programmer/Analyst	\$33,819	\$1,306	\$34,859	5.5
Senior programmer	\$33,911	\$1,105	\$34,631	6.5
Programmer	\$27,581	\$1,125	\$28,312	3.2
<b>TECHNICAL SERVICES AND OPERATIONS</b>				
Technical services manager	\$53,544	\$3,174	\$56,799	13.0
Senior operating systems programmer	\$47,059	\$1,323	\$47,886	11.2
Operating systems programmer	\$39,355	\$1,301	\$40,196	7.3
Data center or operations manager	\$41,527	\$2,005	\$42,878	12.1
Data center shift supervisor	\$30,184	\$1,197	\$30,926	8.5
<b>DATABASE GROUP</b>				
Database manager/Administrator	\$49,384	\$2,193	\$50,938	10.5
Database analyst	\$41,594	\$1,489	\$42,561	8.0

## Nuts and bolts

The fourth annual *Computerworld* salary survey was conducted in June by the Research Services unit of IDG Communications, Inc. The survey was mailed to 9,000 IS professionals using mailing lists from three sources: the Data Processing Management Association, the Applied Computer Research directory of top IS executives and *Computerworld*. The *Computerworld* portion of the listing consisted of companies ranked among the 1989 *Computerworld* Premier 100 as well as top executives and subscribers who are managers of IS organizations. The 1,594 completed questionnaires constituted a response rate of 18%.

## CIO/VP/Director

1987	\$59,463
1988	\$62,669
1989	\$63,989
1990	\$68,690



## Information center manager

1987	\$46,757
1988	\$45,748
1989	\$43,672
1990	\$45,179



## Senior systems analyst

1987	\$38,908
1988	\$40,552
1989	\$40,648
1990	\$44,569



## Data center shift supervisor

1987	\$28,944
1988	\$29,319
1989	\$29,179
1990	\$30,184



## Senior programmer/analyst

1987	\$35,678
1988	\$35,803
1989	\$34,135
1990	\$39,656



## Communications manager

1987	\$46,372
1988	\$50,318
1989	\$50,268
1990	\$48,634



## Systems and programming manager

1987	\$48,290
1988	\$49,233
1989	\$51,088
1990	\$53,549



## Senior programmer

1987	\$32,313
1988	\$31,488
1989	\$31,827
1990	\$33,911



## Database analyst

1987	\$37,606
1988	\$41,215
1989	\$40,463
1990	\$41,594



## Communications specialist

1987	\$35,346
1988	\$35,736
1989	\$36,473
1990	\$37,271



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# IN DEPTH

## Desert downsizing

*The Arizona Clearing House Association bet its business that PC LANs could replace its minicomputer, and it won*

BY ROGER A. PHILIPS

**T**wo years ago, Paul Finch Sr. made a proposal that, in the invisible and cautious world of bank clearinghouses, seemed both bold and risky. Why not, Finch asked, replace an aging Stratus Computer, Inc. system running Cobol with a new system based on networked personal computers?

On the surface, there was nothing extraordinary about the idea. After all, hundreds of organizations were shifting from mainframes and minicomputers to networked PCs in hope of boosting performance and cutting costs.

What differed here was the risk. The Arizona Clearing House Association (ACHA) was proposing to downsize its high-volume, round-the-clock mission-critical applications onto networked Intel Corp. 80386-based PCs. As far as Finch — ACHA's president and chief executive officer — knew, few if any organizations had attempted such a risky move.

The price of failure would be catastrophic: ACHA is the nation's third largest privately owned bank clearinghouse. Serving 113 financial institutions from its Phoenix headquarters, ACHA processes more than 65 million items per month. On peak days, the value of transactions processed can reach \$300 million. A break in service could spell disaster for virtually every Arizona resident. Everything from direct deposits and social security checks to standard check-clearing and fund transfers would be affected.

Philips is general manager, international, for Visinet, a Phoenix software company.

Despite the possible risks, the benefits would also be great. Finch calculated an immediate \$1.5 million in hardware savings, and laser-optical write-once read many (WORM) drives could save thousands in microfiche costs.

The idea of downsizing was already building momentum at ACHA. Two years earlier, applications were moved from an IBM 3090 mainframe to a Stratus minisupercomputer running Cobol. But, Finch says, even after the conversion, the arrangement was "at best, satisfactory." Furthermore, throughput was poor.

ACHA ran two main applications. The first was an on-line, real-time authorization system. In effect, the system says: "This transfer is OK to do now." The other application is a batch system supporting operations of automated clearing.

ACHA estimated it would cost \$500,000 to redevelop the application software, whether or not the target hardware platform was a mainframe or a PC. Because of the first-in first-out nature of the application, no large sorts would be required, and transactions could be processed in real time. All these factors favored a PC network.

Around the same time, local-area networks and the new generation of 386-based PCs were drawing attention. "The 386s were hot on the street," Finch recalls. "So we started playing with capabilities, to see what it could do for DP. We took the arc/dearc benchmark and said, 'This thing can really crunch data. What if we had a bunch of these things?' We could architect the applications into a parallel processing model and segment it into workstations."

Internal business functions at ACHA had recently installed office LANs. The idea of combin-

ing PCs and LANs ticked.

Pitching the idea to the ACHA board of directors was pretty simple, Finch says. "I told them they could spend \$2 million on superminis or spend half a million on an experiment that might work. The board was pretty astute. They went for it."

Finch and a key developer started by defining the basic structure of the system. A week

came there are few software packages specifically written for automated clearinghouses, ACHA decided to write its own.

But there were several problems to be solved. Large data stores would be necessary, far beyond those available with conventional file servers. Uninterrupted service, a flexible growth path and a high level of system security were also essential.



Michael Horne

later, the developer came back and handed a file to Finch in live mode. Soon after, a small development team was formed. Besides an ACHA information systems manager and systems specialist, the informal group included a three-member team from Tempe, a Tempe, Arizona-based consultancy, one of whom was Finch's son, Paul Jr.

Working as a team, Finch and the others rebuilt the process to create an on-line application that could be dialed in to PCs. Be-

Finch, an industrial engineer with 30 years of computer experience, says he believed strongly that software prototyping was the way to go. He reasoned: "That's how they make airplanes and cars. Why can't we do that for software?"

The group produced several improved prototypes — versions dubbed wood man, tin man and stone man. When things looked in pretty good shape, and testing, change management and change control had been

- \$1.5 million hardware savings
- Checks for all of Arizona at stake
- 1 million transactions per hour

accomplished, developers polished the system off.

In October 1989, the system was ready. ACHA decided that a "flash conversion" to all 96 system users was the way to go. "It was the cleanest conversion of my life," Finch says.

The plan of re-engineering the software to mainframes if the LAN architecture didn't work out proved unnecessary.

#### PC parallel process

The LAN approach is essentially a parallel architecture with each PC asynchronously processing transactions while sharing database access through file servers. The architecture is an Arcnet topology-based LAN with identical Intel 386 machines at each node.

Btrieve, from Novell, Inc. in Provo, Utah, was selected as the file manager because, Finch says, a Btrieve model running on a 386 was faster than an equivalent method on an IBM 3090. Storage Technology Corp.'s 2.5G-byte disks provided the mirrored on-line direct-access storage device required. The system archived through laser-disk WORM technology. A six-second response time from archive was reached using a custom-developed interface, and the WORM technology made unauthorized alterations of the archived database difficult.

ACHA chose Quarterdeck Office Systems' Desqview for communications between itself and member institutions. Seven ports run at a 9.6K bit/sec. rate, but data is compressed at a 4-to-1 ratio,

offering an effective rate of 44K bytes. The compression algorithm encrypts using a tamper-resistant rotating key.

Port protection is provided by a product called Defender from Digital Pathways, Inc. in Mountain View, Calif. Defender requires the calling institution to properly respond to a coded signal using a handheld 10-key decrypter before gaining access to the system. All lines are publicly switched dial-up types.

Each port is managed by a dedicated 386. Finch's rule of thumb is to add a port if all ports are ever busy for 15 minutes. Since most of the application processing is also performed by the port manager, system capacity can be added along with ports. The flexibility of the architecture is demonstrated by the fact that additional

ports, together with their 386s, can be added overnight if necessary.

Finch says that since last fall the Novell, Inc. LAN has proven to be extremely reliable; there has been no downtime. Reliability is helped by meticulous operational conditions: a raised floor and an air-conditioned computer room with no PCs turned off — ever. Finch also plans a rolling replacement program for all PCs during a two-year period.

In any event, Finch says, the LAN offers a robust environment. A node may fail, but that doesn't affect other nodes, and the failing node can be readily replaced. File servers are duplexed with cables to provide redundancy. The operator's console is also an exact duplicate of a file server. The two can be swapped for additional backup capability. Operational tests have shown that such a swap can be accomplished in less than six months.

To further ensure uptime, ACHA has added a \$15,000 uninterruptible power supply (UPS) that can supply 90 amps for

**F**INCH'S RULE of thumb is to add a port if all ports are ever busy for 15 minutes.

two hours from batteries. This is superfluous, however, because the entire configuration draws only 20 amps. With this setup, a backup generator is unnecessary, because the UPS will permit at least eight hours of operation in the event of a complete power failure.

Restart/recovery is possible from any previous time using the laser disk archive. This has been used in the past to help member institutions that may have lost a source file.

Finch says the PC LAN approach has been excellent. Throughput, reliability and security have exceeded all targets. Networked PC costs were just \$155,000 — compared with \$1.5 million to \$2 million for superminis or mainframes.

ACHA met its software development estimate of \$500,000 using C and "lots of tools." Report processing was written in Cobol and transaction functions in C, Finch explains. All told, the project produced 150,000 lines of code and took between five and six man-years over an 18-month development cycle.

The new PC LAN system can process between 650,000 and 1 million transactions per hour, according to ACHA. In fact, Finch says, the PCs handle more volume than any mainframe could.

Another big payoff came from storage savings. By archiving to a WORM system instead of microfiche, ACHA eliminated some \$4,000 to \$5,000 in storage and maintenance costs. "Now, we can put 15 days of transfer history onto a disk for \$125," Finch says. Users can also access historical transaction records on-line, which was not possible with microfiche.

Another bonus: The automated clearinghouse software worked so well, Finch says, that ACHA sold it to Telnet. The Arizona firm is gunning for the other two Goliath vendors in the industry: Visa U.S.A., Inc. and the Federal Reserve System, both of which sell their own systems.

ACHA is looking into using Intel 486-based PCs on dual servers. "But for now, we've got more power than we can use," Finch says. ■

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# COMPUTER INDUSTRY

## NATIONAL BRIEFS

### Halfway to a billion

It is appearing more than likely that Novell, Inc. will reach the half-billion-dollar mark in revenue this year. The Provo, Utah-based networking company announced last week that its third-quarter net income had jumped 122% from last year's comparable period. Novell also stated that net income hit \$26.1 million, up from \$11.8 million during the third quarter of 1989. Net revenue for the period was \$131.1 million, compared with \$101.8 million last year, according to the company.

### Smooth Sailing

The American Electronics Association (AEA) voted Washington State Sen. Jerry Saling its 1990 "High Tech Legislator of the Year" last month. The award is presented each year to recognize state-level legislative efforts that contribute significantly to the growth and expansion of the electronics industry. Saling's championship of higher education — an issue that has been particularly targeted by the AEA — topped him the group's top honors this time around, according to the association.

## Software tries out for leasing role

*Despite criticism, small group of companies sees star potential in software leasing*

BY ROSEMARY HAMILTON  
OF STAFF

When Joe Burke, chief financial officer at General Logistics International, Inc., recently set out to license a Sybase, Inc. database management system, he financed the deal through Meridian Software Funding, a software leasing company and division of Meridian Leasing Corp.

He worked out a monthly payment plan, which he said is like "leasing a car." To Joe Burke, it was the most sensible way to make a major software commitment and not get killed by the uproot costs.

"They were really flexible and custom-made the package to fit our needs as far as financing was concerned," Burke said of Meridian. "You really can't do that with a bank."

These days, a small group of companies is hoping there are a lot of Joe Burkes in the information systems world. Together, these firms make up the emerging software leasing market, a niche still too young to call a success or failure. Some observers suggest this could be the next gold mine in the leasing market. Others say that it will never amount to much because there is too big a downside.

One thing is sure: Software leasing has caught the attention of the leasing industry. The Computer Dealers and Lessors Association (CDLA) plans its first workshop on software leasing at its upcoming meeting in October.

"There is great intrigue on behalf of the core body of CDLA members to know more," said Ken Boudin, CDLA's president. "The basic position is that we have an obligation to intro-

duce our membership to new markets. This one seems to be that."

Software leasing is actually not brand-new. A couple of low-profile companies — Software Leasing Finance Group in Sacramento, Calif., and Software Leasing Corp. in Beverly Hills, Calif., for instance — have been making a go of it for a few years. In addition, some of the bigger leasing concerns, such as IBM Credit Corp. and Comdisco, have offered leases on soft-

ware, but they are, and some observers pool-pool it as too high-risk and too low-profit.

Simply put, software leasing provides users with a vehicle for financing software through a third party, much as they do hardware. But for the lessors, software and hardware are hardly the same.

The biggest barrier to software leasing is the issue of software ownership. Large-scale users generally fi-

### To buy or not to buy

*Software leasing has promise, early advocates say; whether the market will perform is another question altogether*

#### PROS:

- Bring users closer to one-stop shopping
- Holds no real downside for users



#### CONS:

- Ambiguous ownership of underlying product pumps up the risk and puts down the profits for lessors
- Extent of real user need not yet known

CF Chart Mark Hanes

ware in select cases, particularly when it is part of a big hardware deal, observers say.

What is new is the amount of attention software leasing has been getting lately. This comes in part because of increasing software costs. With software accounting for a bigger chunk of the IS budget, managers are now more than ever looking for alternative ways to finance it.

In addition, one of the biggest boosts to software leasing came within the last year when Meridian, a major hardware lessor, acquired privately held Software Funding and then set out to promote the business.

Even so, many IS managers are still unfamiliar enough with the concept to

cease software; they don't buy it outright. So-called "software lessors," therefore, are actually financial middlemen. The original vendors remain the owners of the software in question.

This makes software leasing riskier and likely not as profitable as hardware leasing, some observers say. In short, the lessor needs to rely too much on a particular client in a software deal. He counts on that customer not to back out of the contract and also to renew it once the term is up. In contrast, hardware lessors can resell their equipment many times over. It reduces their dependency on individual clients and allows them to make more money on a single item.

*Continued on page 66*

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## Leasing

FROM PAGE 65

This risk is the reason Comdisco will not pursue software leasing as a specific line of business, said Robert Barclay, a vice-president of the firm. Barclay said Comdisco will continue its policy of leasing software in certain cases but will not dedicate a staff or division to it.

"We still haven't seen people lining up at the door for this," Barclay said. "If I lease software to a company, the software can't be moved. If I get it back, I can't move it to another site. Unless you can do this, I don't see it as a big business."

There are many software leasing proponents who expect it to become a shining star in the leasing industry. John Imlay, chief executive officer of Dun & Bradstreet Software, said he expects software leasing to take off soon. His company works with three software lessors, referring potential customers to them to arrange finance deals.

"It's just coming to the forefront," Imlay said. "You used to sell just payroll. Now you sell payroll integrated with other software, and these packages are a tidy sum."

The highest profile software

lessor is Meridian's Software Funding division. Dave Smoot, who headed the company before Meridian acquired it and remains in charge, dismissed criticism.

Smoot acknowledged the risk but suggested some ways to work around it. First, he said, work only with reputable customers. Second, deal only in software that will likely stay at a customer's site for years. Meridian leases databases, software engineering tools and integrated application packages because they take a long time to install and often become part of a company's core information systems.

"Is there a risk to software leasing? Yes," Smoot said. "We could be left holding the bag. Would I do this for word processing? Probably not. That could get thrown out every year. But a database package that includes development languages—the customer probably builds products around that. What's the chance of them giving it up in three years?"

Gartner Group, Inc., a market research firm in Stamford, Conn., said it suspects that few other high-profile players will enter into software leasing, which will remain a minor market unless rules of software ownership change.

"Meridian has been success-

## An idea that wouldn't go away

About 10 years ago, Howard Smith was working at Management Science America Corp. (MSA), and the concept of software leasing popped into his head. Smith has since joined the ranks of computer industry entrepreneurs, but he has not been able to shake the idea of software leasing.

He tried to make software leasing work at MSA, but it was operated only on a limited basis. "I think Howard got the idea before its time," said Dun & Bradstreet Software CEO John Imlay, who was then president of MSA. MSA has since been acquired by Dun & Bradstreet and has merged into D&B Software. Today, Smith runs Software Leasing Corp. in Beverly Hills, and while it isn't a booming business, Smith said he's doing fine.

"I see this as a niche," Smith said. "We aren't making a lot of money, but some people find software leasing a more desirable alternative."

Recently, Smith made a deal with Price Waterhouse that allows his company to provide

leasing services to the accounting firm's clients. Smith has built up a client base of about 30 since starting Software Leasing 3½ years ago.

"For the first three years, it was like when I was first at MSA, and we spent a lot of time trying to convince people to buy software rather than write it themselves," Smith said. "Now, in the last six or eight months, the software companies are starting to get interested in this."

Between leaving MSA and starting Software Leasing, Smith took a breather from the computer industry, but the software leasing concept stayed with him. "I always thought it was an intriguing concept," he said.

In 1986, as he was starting up his own company, Smith called on Imlay again. "John said, 'I think this is something that can happen, but it's not quite the time,'" Smith said.

"John was right," Smith admitted. "It has taken about three years not only to educate the software companies but also to educate the buyers. They've never had this alternative presented to them before."

ROSEMARY HAMILTON

ful because it's an offshoot of their hardware leasing business," said Barbara Sannerud, an analyst at Gartner Group. "I remain suspect that companies only doing this have a booming business at this time."

Yet Ned Livornese, a Washington, D.C.-based attorney who specializes in the leasing business, said, "I personally think it's going to take off."

While acknowledging the risks associated with software

leasing, he also suggested that there is no real downside for the user. Eventually, he said, it could be users who end up driving the market. "From their perspective, I would think they should feel comfortable doing this."

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## COMMENTARY

Patricia Keefe

## Reading their flips



By now, everyone knows that George Bush, a good two years after issuing a Pollyanna "promise" not to raise taxes, just recently came to realize that the country has been facing a deficit that almost defies quantification.

But let's give President Bush the benefit of the doubt. After all, when pressed on taxes, what did he actually say? "Read my lips." We all know how hard it can be to read a bunch of mouthed words from across a crowded room.

Heck, he could have said just about anything. Maybe we heard what we wanted to hear. As the towns gaffly once told me, "You should quote what I mean, not what I say." Uh-huh.

With that in mind, it might be a good time to take a look back at some computer indus-

try flipflops. It's possible some of us missed the real message the first time for two around:

- **Apple.** Two-and-a-half years ago, the increasingly suspended Pepsi generation created Claris as an independent software division. Apple promised anxious third-party developers that it would spin Claris off in a year.

Last month, Apple reneged, noting that software has become important. Gee, we always thought it was. Just ask Microsoft, which owns the Macintosh applications market, as well as what many see as Apple's biggest threat, Windows 3.0.

- **Ashken-Tate.** Last October, then-Chairman Ed Esber said that he would be personally responsible for getting the extremely late Dbase IV 1.1 out the door. Esber was relieved of that weight April 30, after he resigned as president and chief executive officer. Release 1.1 shipped in early August.

- **Novell.** Novell announced... actually, whenever Novell announces anything, it pays to check your memory banks—first to make sure the product isn't being reannounced, and second, to see what the initial ship date target was. For example, Network 386 went from a one-time ship to a two-phased

delivery (3.1) to a three-phased delivery (3.2). I can hardly wait for 3.4, or would that be 4.0?

- **Banyan Systems.** Banyan is given to making pronouncements about what will happen, say, six months down the road—it could be an initial public offering, several agreements with other industry players or users or, perhaps, support for Netware. Typically, six months come and go without anything happening. Obviously, the developer of Vines closes no deal before its time—and often not

## HEY, GUYS, you're either open or you aren't.

even then.

- **3Com.** Chairman Bill Krause delights in talking about how open he is with the press. Then again, according to Mr. Bill, an internal document regarding a would-be merger with Echelon doesn't exist, which is rather odd, since I'm looking at it as I write this. Maybe I need new glasses; CRTs can be hard on the eyes.

- **Microsoft.** The year of OS/2

has shifted from 1990 to 1993-1994. But you don't have the money in your budget anyway. Don't forget memory—first, it's an issue, and then it isn't. Users like to note that when you start talking several hundred or thousand PCs that need memory upgrades, no matter how cheap the bytes, it all adds up.

- **Lotus.** The spreadsheet maker succeeded in making its interface an industry standard and then promptly sued people for copying it. Lotus is now trying to push an OS/2 interface as a standard interface. This time around, developers should extract an agreement not to sue.
- **DEC.** Here's a goodie. Those wacky engineers at DEC plan to work on an open, plug-and-play network architecture that deliberately excludes support for Sun Microsystems products. Hey, guys, you're either open or you aren't.

- **Texas Instruments.** Were it not for Dbase IV 1.1, TI could lay claim to having the most mobile delivery date in the industry. How many times has TI rescheduled or re-estimated delivery of its 4M/16M bit/sec. token-ring chip set? Five times, maybe? Will it ever ship?

Keefe is Computerworld's senior editor, PCs and workstations.

## NATIONAL BRIEFS

### The E-mail of the species is deadlier than the mail

A recent report from Cambridge, Mass.-based market research firm Forrester Research, Inc. said that electronic mail has not been the boom it was cracked up to be. Based on interviews with 50 Fortune 1,000 companies, voice mail and facsimile machines are outstripping the once-popular on-line communication system. "Large companies have been duped into buying many incompatible E-mail systems on their [local-area networks]," said Forrester network strategy service director Mary Modahl. "They end up with a mish-mash that doesn't even provide basic communications between their users." Unless they are able to commit to a single E-mail vendor, Modahl concluded that "companies are better off just using the telephone."

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## Zenith awarded government grant for HDTV

BY ELLIS BOEKER  
OF STAFF

GLENVIEW, Ill. — Zenith Electronics Corp. received its first government grant for its high-definition display technology last month. The award, from the Defense Advanced Research Projects Agency (DARPA), will go toward developing less costly manufacturing methods for Zenith's flat-panel monolith high-resolution monitors. Zenith said it expects the award to be over \$1 million.

"The DARPA announcement reaffirms our belief that we have real, world-leading high-definition display technology

and research programs," Zenith Chairman and President Jerry K. Pearson said in a statement.

Zenith has been investing heavily in high-definition television (HDTV). The firm has reportedly allocated \$40 million of its 1990 budget for research and development in this area and for its HDTV transmission system.

Pearson called high-definition displays "one of the next big high-technology battlegrounds" between the U.S. and other countries. Zenith estimated the worldwide market for high-definition dis-

plays at 1 million units this year.

According to analysts, however, the award said as much about DARPA as it did about Zenith. "DARPA's trying to keep a little bit of profile in this business," said Dale Cripps, publisher of "HDTV Newsletter" in Portland, Ore.

Cripps noted that the dismissal of DARPA's longtime director Craig I. Fields this year (CW, April 30) had caused some to wonder if the agency would back away from some funding projects.

Reportedly, Fields' critics charged that his agency's funding policies bordered on setting U.S. industrial policy. One million dollars, Cripps continued, will further Zenith's research, "but it won't go far with hardware."

In addition to Zenith, DARPA picked five other companies for funding of military applications for high-definition displays: Norden Systems, Inc. in Norwalk, Conn.; MRS Technology, Inc. in Chelmsford, Mass.; Orcon Imaging Systems, Inc. in Troy, Mich.; Microelectronics and Computer Technology Corp. in Austin, Texas; and Tektronix, Inc. in Beaverton, Ore.

DARPA already has contracts with seven other vendors to conduct display research.



## INTERNATIONAL BRIEFS

### How do you spell 'relief'?

For many of the customers stranded mid-Atlantic Computer Systems' unexpected collapse this past spring, the answer may be I-B-M. Atlantic's administrators recently named IBM UK the "preferred intermediary" for dealing with lessors and lessees of the fallen computer leasing firm, according to reports in the British financial press. Terms of the contract were not released.

### Dial, Britannia

The sun set last week on the British electromechanical exchange. This move marked the end of old-style UK telecommunications and ushered in what British Telecom claimed is the first wholly digital long-distance telecommunications network to be created by a major country. The network is part of a British Telecom investment program estimated at upwards of \$5.9 billion annually.

### Information, get me Memphis

France Cable et Radio, a subsidiary of France Telecom, acquired a majority stake last month in Memphis-based network and services management vendor Cyclica Communications Corp. The deal marks the French communications company's first majority position in a U.S.-based firm.

### OMG going strong

U.S.-based Object Management Group (OMG), a vendor/user association dedicated to the promotion of object management technology, ended August with a banner week. The organization — up from nine members to more than 80 during the past 18 months — announced the addition of 11 new corporate and associate members, including the likes of Du Pont Co., Motorola, Inc. and Xerox Corp.

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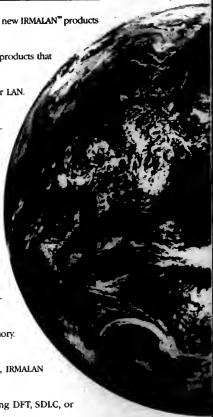
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# Norsk Data comes back to post profit

BY DON RADOL  
SIC NEWS SERVICE

OSLO — For executives, employees, investors and customers of computer companies currently in the throes of painful product and corporate transitions, Norsk Data SA's second-quarter financial report may come as a welcome reminder that there can be light at the end of the tunnel.

The Norwegian computer maker turned systems integrator surprised local analysts late last month by posting a pre-tax profit of \$461,538 before extraordinary items for the first half of 1990. Ana-

lysts had predicted losses ranging from \$3 million to \$8 million.

Despite the fact that the company's profit was modest, President and Chief Executive Officer Erik Engelsen pointed out that the results for the first half of the year represent a \$38 million turnaround, compared with the \$37.5 million loss the company suffered in last year's similar period.

Analysts were quick to point out that without a foreign exchange gain of \$2.6 million, the company would have posted a pretax loss. Engelsen said the gain was due to a stronger-than-expected En-

glish pound and West German mark in relation to the Norwegian kroner.

Operating revenue for the period climbed 10% to \$188 million from \$172 million in the corresponding period last year.

"What is important for us is that this positive development occurs at a time when other major players in the computer industry are faced with a difficult and challenging time," Engelsen said.

"This confirms that the painful measures we have had to take were necessary to ensure the healthy future of the company. Our role as a systems integrator does

correspond to what the market currently requires," he added.

According to Engelsen, the company made satisfactory gains in markets with a variety of products and applications. He noted especially positive developments in graphics, in the Scandinavian public sector and in computer-aided design and manufacturing solutions for the West German mechanical industry.

Orders in the first six months were level at last year's, reaching \$188 million. Product sales accounted for 57% of this figure; maintenance, training and other services represented the remaining 43%.

The total number of employees at the end of the first half of 1990 was 2,834, compared with 3,333 at the end of June 1989 and 2,941 at the end of December 1989. Currently, 65% of the work force is located in Scandinavia, with the remaining 35% spread throughout Europe.

While heartened by the firm's newly trim profile, Engelsen noted that maintaining and increasing the progress made to date is a challenge that will be confronted "in a very competitive marketplace and will continue to make heavy demands on the entire organization."

He said he envisions Norsk Data as a major player in the European computer market in the coming years. Apart from being a systems integrator, he revealed that the company has plans to develop a facilities management offering for European customers.

Per Holte Rosenkilde, president of International Data Corp./Norway, said Norsk Data had managed its turnaround operation in record time. He predicted revenue of \$415 million for the year. According to Rosenkilde, other European and U.S. minicomputer makers will have to swallow the same bitter pill that Norsk Data was forced to take two years ago and reduce their work forces by about 20%.

## EXECUTIVE CORNER

### Hughes LAN unit names president

Ungerstrom-Bass, Inc. founder and former executive Joe Kennedy is the new president and chief executive officer of Mountain View, Calif.-based Hughes LAN Systems, Inc., a subsidiary of Hughes Aircraft Co. Kennedy, a networking industry veteran who most recently headed up 3Com Corp.'s government products division, was simultaneously appointed a senior vice-president of Hughes Network Systems.

Venture capitalist and longtime Kaypro Corp. affiliate Geoffrey Soule was unanimously elected president and chief executive officer of Kaypro last month. Soule's placement at the head of the beleaguered computer company reportedly aided in persuading the federal bankruptcy judge now presiding over Kaypro's Chapter 11 proceedings to give the company until Sept. 3 to prove that its attempted reorganization has a realistic chance of succeeding.

Eric Benhamou, president of 3Com, has been named CEO of the networking firm, which is located in Santa Clara, Calif. Benhamou, 35, replaces Bill Krause, who will retain his position as chairman of the board.

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# COMPUTER CAREERS

## Your next move may be on you

Corporate cost controls are taking the wind out of paid relocation benefits

BY JANET RUHL  
SPECIAL TO C.W.

**C**an't stand the thought of another snowy winter? Wish you could move back home so the kids could grow up near their grandparents? Taking a new job with a company that offers paid relocation may be a way to move to your dream destination. But whether an employer will pay your relocation expenses depends greatly on what skills you have, what your salary is and where you want to go.

Many recruiters report that with today's business climate, the overall number of paid relocations is down. Job hunters looking for relocation to major urban areas are having the worst luck, says Rick Young, a recruiter at Corporate Personnel Consultants in Charlotte, N.C. He says that in some cases, companies in large cities refused to interview out-of-state candidates because they had no intention of offering a relocation package. Relocation activity is greatest in small towns in the Southeast because there is no pool of experienced information systems talent for employers to draw on, Young says.

Relocations to the Northeast have dropped because of the region's high housing prices, which

have discouraged people from moving here, says Jim Bond, a senior placement manager at Robert Half International, Inc. in Hartford, Conn. In the Hartford area, paid relocations have decreased substantially because employers have become more cost-conscious, Bond says.

Midwest employers tend to offer relocation packages only to people moving from areas east of the Mississippi, says Mike Becker, a principal at Michael Thomas, Inc., a recruiting firm in Columbus, Ohio. One reason is that Easterners fit in better with the local lifestyle than do Westerners.

This kind of geographical exclusivity does not necessarily work both ways. Employers in the San Diego area will relocate people from anywhere in the country if they have skills that are not readily available locally, says Jack Friedman, staffing manager at Technical Directions, Inc. in San Diego.

Recruiters agree that their clients have gotten pickier about whom they relocate. In general, only candidates whose resumes demonstrate hands-on experi-

ence with the latest hot technologies need apply. While the particular software experience in demand varies from region to region, recruiters say that DB2 heads the list of skills their clients are willing to pay for, followed by a selection of fourth-generation languages and industry-specific applications. Bond reports that his clients tend to look for applicants who have worked for "brand-name" companies.

In addition, most of the recruiters report that the heaviest relocation traffic falls within the \$20,000 to \$40,000 salary range. To some extent, this reflects the fact that the companies most willing to relocate employees are in areas where both the cost of living and therefore pay rates tend to be relatively low.

Companies in rural New England rarely pay to relocate anyone making more than \$40,000, says John Hodiska, who runs EDP Placement Associates in Stowe, Vt. However, these companies will relocate technical people willing to take a salary cut if they really want to live in the region; companies in other areas

will rarely relocate an employee at a lower salary for fear he won't be happy taking a cut in pay and won't stay long.

The bulk of relocations involve programmers rather than managers, recruiters say. Bond says the only managers he sees are companies pursuing with reloca-

The more deluxe packages usually start with a payment for moving household goods. They also cover the costs of transporting a family and automobiles to a new destination, the expenses of one or two house-hunting trips and payment for temporary housing during the brief period

**I**N GENERAL, ONLY candidates whose resumes demonstrate hands-on experience with the latest hot technologies need apply.

tion in mind are IS directors with the precise hardware, software and industry background needed. However, Becker says, when managers are relocated, the packages offered them are more complete than those offered to programmers.

One group of employers that does seem to routinely offer relocation packages is the larger consulting firms. David Reinhold, vice-president of personnel and recruiting at Computer Horizons Corp., which employs 1,500 consultants, says that it is standard in his industry to offer relocation packages because consultants must move all over the country to fill contracts.

The details of relocation packages vary, but there seems to be two common types. In the stripped-down version, the hiring company pays employees a lump sum ranging from \$500 to \$3,000. Out of this, they are expected to cover all moving expenses.

surrounding the move.

Some companies will also pay the cost of points needed to get a new mortgage or will offer an amount equal to half a month's salary to be used for incidental expenses. How generous a company is with its relocation package depends on a number of factors, including its size and the job level at which the new hire is being brought in.

The single biggest change in relocation packages over the past few years — which may come as a nasty surprise to people who haven't relocated recently — is that companies now almost never buy out a newly hired employee's home. Becker says that in the Midwest, this once-common benefit is not even offered to vice-presidents and IS directors.

*Ruhl is a consultant and programmer in Concord, N.H., and author of The Programmer's Survival Guide: Career Strategies for Computer Professionals.*

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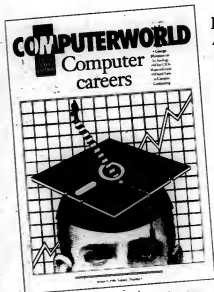
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### **Planned Editorial Features:**

(subject to revision)



- MIS salary and job satisfaction survey
- Where are the best jobs?/What positions are hot?
- Experiences of recent MIS graduates in their first jobs and what helped them in school
- The MIS career ladder
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# TRAINING

## Dealing with problem students

*Disruptions are inevitable, but trainers can prepare for unruly types*

BY NAOMI KARTEN  
SPECIAL TO CW

**I**nformation systems managers who put themselves in the shoes of one of their trainers might find themselves scurrying back to their offices and locking the doors. Many managers may not realize that when they send their trainers off to teach a class, they may be sending them into the lair of the problem student.

It's important for IS managers to arm their trainers with the knowledge and techniques necessary to deal effectively and professionally with this dangerous species.

From the trainer's perspective, problem students fall into two categories. The first one is the troublemaker. This student is untamed by nature and seems to delight in giving the instructor — and just about everyone else — a hard time. The troublemaker will disagree vehemently with the trainer's instruction, repeatedly challenge points made or stubbornly resist participating in class activities. This behavior

would not be a problem if it occurred in moderation; however, when it turns into relentless aggression, it becomes unsettling. Fortunately, this type of student is not as common as the second one — the dominator.

These students don't mean to be a problem and are often unaware that their behavior is disruptive. Dominators may be quicker or slower than average in absorbing the class material and may demand too much attention. They may ask more questions than time allows and make too many long-winded points. This type of student distracts the trainer and the entire class.

Any trainer will have a certain amount of material to cover under a tight schedule. To fit everything in, the trainer must minimize distractions and reduce the impact of any problems that do crop up. The trainer should take the following steps:

- Establish ground rules. Setting guidelines about what is

and is not permitted will usually win the respect of the class. Students cannot be faulted for ignoring ground rules they aren't aware of. Problems in class can often be traced to the trainer's failure to lay down the law.

The trainer, for example, should explain how much time will be available for questions and when they are allowed. Ground rules will also address such things as when conversation among students is permissible, the length and frequency of breaks and how students should alert the trainer to problems they have.

• Project an air of confidence. Truly difficult students — the real troublemakers — are often very perceptive. When they identify a weakness in others, they rush in to take advantage of it. Trainers can prevent this situation by remembering to take charge of the class and act accordingly. Even though the trainer may not feel 100% confident, it is important not to reveal

uncertainties or insecurities.

Many students are skeptical at the start of a class and expect the trainer to convince them that the class is not going to waste their time. So the first half-hour is especially important in getting off to a strong start. Instructors should also clearly state that they are available during breaks to meet with anyone who has a problem. This will help establish the instructor as the person in charge of the class.

• Identify potential problem students. A trainer might want to open a class with an activity that helps gauge students' attitudes. For example, if the class is small, the trainer should ask the students to describe relevant problems they are facing or their worst computer experience. The trainer can pose a question to the group as a whole or divide the class into smaller groups and assign an activity that generates interaction.

In a class for IS staff members, the trainer could ask the students to identify aspects of the subject that arouse skepticism. In an end-user class, the trainer could ask the students to describe the factors that have made their computer use productive or unproductive. These ice-breaking activities generate considerable interaction and

give the instructor a chance to size up the group.

• Use humor. When a problem student surfaces, everyone else in the class is as aware of it as the trainer, and everyone is curious to see how the trainer will handle the situation. The best way is to get rid of the problem without embarrassing the student. Many trainers have developed their own amusing techniques. A trainer might announce (with a grin) that every class should have its officially designated problem student and ask if there are any volunteers. With such playful techniques, trainers can maintain control, defuse problems without causing embarrassment to the students and demonstrate a sense of humor.

When problem situations do arise — and a certain number are inevitable in every trainer's career — the trainer should try to learn from them. After the class has ended, the trainer should examine the situation and determine how to prevent a recurrence. It is no coincidence that the instructors who are best prepared to deal with problem students have the fewest.

Karten is president of Karten Associates in Randolph, Mass., and editor of the monthly newsletter "Managing End-User Computing."



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## NEWS SHORTS

### Electronics deficit drops

The Electronic Industries Association chalked one up for the industry's aggressive export initiatives with last week's announcement that the U.S. electronics trade deficit fell approximately 60% in the first half of 1990. Electronic products exports reached approximately \$36 billion, 14% over the year-end 1989 figure. Imports for the corresponding period rose 3%. Industrial products led the import and export categories as of June, with \$3 billion coming in and \$4 billion shipping out.

### U.S. inks cash management pact

Computer Sciences Corp. has been given a contract worth as much as \$49 million to overhaul systems that support cash management, payments and other functions of the Financial Management Service, a bureau of the U.S. Treasury Department. The project, designated a Presidential Priority System because of its potential benefits, will employ electronic data interchange, electronic funds transfer and other automated aids to manage a daily cash flow of some \$10 billion, including Social Security payments. Andersen Consulting and Grumman Data Systems also bid on the job.

### UK adds high-speed net

The first 10 G bit/sec. local-area network in the UK will blow into the European Circuit for Medium-Range Weather Forecasts later this year. The high-speed network from San Jose, Calif.-based Ultratrans Technology, Inc. will be used as a backbone, connecting the weather bureau's X-Ray Research, Inc. Y-MP supercomputer, an IBM 3090 mainframe and workstations and slower LANs. The center uses complex numerical models of the Earth's atmosphere to produce its 10-day forecasts for 18 European countries, and transfers of gigabyte-size files across its computer network are not uncommon. According to Ultratrans, the backbone will have the capacity of more than 10 Fiber Distributed Data Interface networks and support host connections of up to 100MB byte/sec.

### Snap, crackle . . .

Compaq Computer Corp. has admitted that at least some of its 10-month-old LTE and LTE-286 laptops are developing hairline cracks in their casing. A Compaq spokeswoman said the problem, which was apparently discovered after calls from customers, was merely "cosmetic" and would not affect the operation of the computer. She also said that Compaq believes the problem is limited to only a few of the 133,000 laptops the firm is expected to sell this year. Compaq has extended the warranty on LTE plastics an additional year and is looking into the cause of and best solution to the problem.

### HP adds Laserjet, trims costs

Last week, Hewlett-Packard Co. introduced a Laserjet printer and slashed prices of its add-on memory boards for its Laserjet HP and III models. The new HP Laserjet III printer, which debuted with a suggested retail price of \$3,595, is the company's second with HP PCL 5 printer language and HP resolution enhancement technology. HP cut the price of the HP 334748 1M-byte memory board from \$95 to \$335 and the HP 334758 2M-byte board from \$750 to \$560. The firm also slashed the price of its Deskjet ink jet printer model (see story page 14).

### Oops oops at Visa Visa

Many Visa card users thought they were seeing double last month — and they were. It seems that Visa International's computers billed some accounts twice for a single purchase. Some customers mistakenly overpaid. The computer glitch affected Mastercard users, too, because Visa's credit-card processing center in San Mateo, Calif., handles some non-Visa transactions for its 22,000 member banks worldwide. The problem occurred July 28 because of a "rare and unusual processing error that was detected within hours," a Visa spokesman said. "We have taken the necessary steps to make sure that these types of processing errors do not happen in the future."

BY CLINTON WILDER  
and MITCH BETTS  
CW/STW

They called it "Wicked Wednesday" at Passport Travel, Inc. in Overland Park, Kan. Passport was one of hundreds of travel agencies forced to cope with computer headaches last Wednesday when a deluge of bargain-hunting air travelers attempted to beat the midnight Aug. 29 deadline for super-cheap airline fares.

All three of the nation's major computerized reservation systems (CRS) experienced performance problems trying to handle the unprecedented demand and to kick in backup CPU power to cope with the volume.

Dallas-based American Airlines, Inc. said its Sabre reservation system processed an all-time high of 10 million messages on Wednesday — handling more than 3,000 simultaneous messages per second. The volume exceeded previous usage figures by 25%.

"We were prepared for an increased volume . . . but at the

same time, I'm not sure we expected it to be this heavy," an American Airlines spokesman said.

In order to keep the whole Sabre network from crashing, Sabre selectively blocked certain incoming lines for intervals of 10 to 15 minutes, a spokesman said.

Passport Travel, which employs 80 travel agents using Sabre, had many agents working well into the night booking tickets delayed by slow system response.

"We get spoiled by the mechanics of the automation, so when [Sabre] doesn't go well, it really throws a wrench into the process," said Sharon Gardner, network manager at Passport. Gardner said Sabre was unable to provide fare information for itineraries that agents had booked, and credit card authorization was also either slow or nonexistent.

Adding to the agency's woes was a Midwestern heat wave, with 100-degree temperatures affecting data lines with slower transmission.

Sabre, which runs eight IBM

3090 mainframes at a data center in Tulsa, Okla., invoked the triadic processing capability of the IBM Transaction Processing Facility (TPF), Version 3.1, which allows three engines to run in a single processor.

Covis Corp., a Rosemont, Ill.-based partnership led by United Airlines, said its Apollo CRS tallied 42 million transactions on Wednesday, compared with the average 34 million per day. Apollo's data center in Denver reached capacity and added two processors, a spokesman said.

System One Corp. pressed several spare IBM 3090s into service to handle processing volumes that were 25% to 30% greater than normal, according to Bill Mowery, senior TPF consultant at the Miami data center.

Mowery said that System One anticipated greater volume from the incentive fares, but what really produced the surge in fares required tickets to be issued by the end of the day Wednesday. "We were not totally prepared to anticipate that big of a ticketing hit," he said.

## RDBMS

FROM PAGE 1

and profit figures for three fiscal quarters last week, although the end result remained the same for the entire year.

Michael Musson, director of investor relations at the company, said an internal investigation showed that \$15 million worth of revenue for contracts booked in the second quarter had to be accounted for in other quarters. The review concluded that overzealous salesmen had posted contracts so that the revenue could be recognized earlier, Musson said.

Other signs of strain within the RDBMS community have recently become evident.

"Salesmen were forced to lay off 90 workers — nearly 10% of its staff — because of lagging domestic sales of its RDBMSs and tools late last month. The firm failed to go public, despite widespread anticipation that it would do in midyear, analysts said. Nevertheless, executives said, in contrast with soft North American orders, the European market is booming.

• Ingres announced a third profit of \$517,000 for its fourth quarter ending June 30 — down from \$4.5 million a year earlier. Executives cited a one-time internal charge to build financial reserves against bad debts and a \$1.5 million moving cost in the UK.

• Informix Corp. had a good earnings report, with growth running 30% over last year's figures. However, sales managers

there also reported slower sales in some market segments.

Industry analysts and the vendors themselves said that most RDBMS firms are still growing, although not as quickly as before. But accustomed to growing rates of 30% or more, the vendors must make organizational changes to bring costs into line.

"The purchase cycle is getting slower, reflecting the recession or economic downturn this country is facing," said Tom Moore, a senior analyst at International Data Corp. in Framingham, Mass. "Users are still willing to part with their money, but they're scrounging around a little bit more."

Executives at most RDBMS firms seemed to agree. "There's sort of a double whammy that hits you in U.S. sales. Remember that there are fewer opportunities, and the decision cycle itself is being pushed out," into 1991.

At Oracle, sales failed to hit the hoped for \$1 billion mark in fiscal 1990, topping out at \$971 million. However, the firm's sales in the RDBMS industry, predicted that it will go on to greater heights next year and will survive even if competitors fail.

Oracle's restoration was the second restatement this year. Last April, the company reported that it had improperly booked \$15 million in revenue for the third

quarter that was not realized until the fourth quarter. That announcement led to a calamitous one-day stock drop, when Oracle stock lost one-third of its value.

Subsequently, Musson said, "Corporate finance dug around and found [another] \$15 million worth of contracts in the second quarter that should have been recognized in different periods."

Musson said the company formerly provided a four-day grace period for salesmen to deliver actual signed contracts to headquarters. "Corporate [headquarters] had no way of knowing whether those contracts were actually signed on the last day of the quarter . . . or a few days later," he said. The grace period has been revoked.

The stock market price for most RDBMS vendor stocks has fallen to \$10.75 per share over the course of last week. "The two most important measures of high-technology stocks we use are the price-per-earnings multiples and the ratio of market value to revenue," said David Beyers, an analyst at Montgomery Securities in San Francisco. "Both of those are at an all-time low for Oracle."



## Lessors

FROM PAGE 1

Changes in the tax laws, a troubled economy and incessant reminders that the computer industry in general has fallen on hard times have made it tough for independent lessors to find the money to finance leases. That, and the certainty that ever-savvier users will continue to demand better terms, is not the stuff of which leasing bonanzas are made, Donovan concluded.

However, he and other analysts agreed that Summit does hold one solid promise for the leasing industry — that of a rejuvenated leasing market.

"A lot of users have sat on their hands," said Charles Greco, an analyst at Technology Investment Strategies. Lessors, he said, need users who are ready and able to commit to future plans. In addition, "They need an injection of new, big-ticket (mainframe) products to maintain their structures; these guys can't live on doing AS/400s." The Summit announcement will deliver substantially on both such scores, Greco speculated.

His view seems widely shared among the analysts who follow computer leasing. Like most in-

dustry observers, James Wei, an analyst at Merrill Lynch Capital Markets, said he anticipated that Summit will arrive in stages (CW, Aug. 20); similarly, he said, Summit's effect on the leasing industry will be a phased one. However, he said, the benefits for third-party lessors should be evident immediately.

IBM's announcement of the 3090 in 1985 paved the way for ICC's rise to its current majority share of the leasing market, but Wei said things have changed.

"We believe the price/performance gain that Summit may represent is substantially more significant than that which the 3090 represented," Wei said.

"Its better price/performance will cause older generations of mainframes to adjust; since they can't alter performance, what they'll change will have to be price."

When the adjustment comes, Wei said, higher-end computing — in some cases, computing itself — will become affordable to a greater number of people, creating a new user base to be tapped by lessors. And, he said, the result will be a cascade of benefits for lessors: "Leasing volume will increase, and lease duration is likely to be longer."

With the easy answers, how-

ever, Summit expectations raise tough questions for the leasing community, analysts noted.

For instance, Greco said, while the revitalized market vision entertained by lessors is not a pipe dream, its precise dimensions cannot be mapped "until we know how much it will cost to upgrade a 3090 to a Summit — and I don't mean just in dollars but also in pain and grief."

IBM's reported commitment to a smooth upgrade path for current 3090 J users distinguishes Summit from earlier major IBM mainframe debuts, making historical precedent a questionable measure of what the market can expect this time.

Looming largest, perhaps, in the issue of what role ICC will play in the post-Summit leasing market, is the pre-Summit scene, ICC has been the independent lessor's nightmare come true. The 9-year-old firm has leveraged its parent's gilt-edged credit rating into majority ownership of the leasing market and has earned a reputation — admittedly deserved — for shuffling leases (see story at right).

There is no assurance that ICC's domination of the 3090 leasing area will not recur with Summit, Wei conceded.

Even so, he and other analysts pointed out, the result could be less than devastating to other lessors, many of whom have recently begun to hedge their bets against the ravages of ICC by expanding their lease portfolios.

## ICC ready and able

Summit "will be the moment of truth for IBM Credit Corp.," predicted Harvey Kinszelberg, chairman of Meridian Leasing Corp., currently ranked second among the country's independent computer lessors. Kinszelberg argued that the new entry's arrival will place IBM's 9-year-old leasing company at odds with its powerful parent's own sales force, which would rather sell new systems than remarket old ones.

Analysts agreed that the Summit debut may lead to a moment of reckoning. However, many said, that showdown is likely to come not for ICC but for the third-party lessors.

"ICC will still be out there, still aggressive, still going for market share," said Thomas Donovan, an analyst at Technology Investment Strategies Corp. in Framingham, Mass. The IBM subsidiary currently commands more than 50% of all 3090s leased, according to Donovan's estimate; to the extent that 3090s are upgradable, he said, Summit is going to be a virtual ICC preserve.

"Any product IBM announces represents more opportunity" for ICC, said Harry Kavetas, president of ICC and an IBM corporate vice-president.

That, Donovan said, could be putting it mildly. ICC has three powerful advantages over its leasing competitors, he said. "It knows exactly what IBM's blend of products is, and down to the most subtle detail," he said. "That's a knowledge advantage. It's got a triple-A credit rating. That's a market advantage. Through interaction with IBM's sales force, it knows exactly when a client wants to lease. That's a strategic advantage."

According to many third-party lessors, some of whom lay the misfortunes of their industry niche largely at ICC's Stamford, Conn., door, the IBM offspring is also playing with a fourth and unfair advantage: the ability to price leasing transactions as low as necessary to clinch the deal.

ICC vehemently denied this. "Our market is very competitive, and we price to that market," Kavetas said. "We will not, however, follow that market when we believe it's putting unprofitable prices into play, and we will not, knowingly, do deals which — for price or any other reason — are not expected to be profitable."

NELL MARGOLIS



## Hitachi Data Systems to revamp leasing rules in fall

Hitachi subsidiary would like more third-party leases in order to expand market for HDS systems

BY JEAN S. BOZMAN  
CI STORY

SANTA CLARA, Calif. — Eager to keep the resale value of its processors high, Hitachi Data Systems Corp. will revise its leasing policies this fall, the company said last week.

"We want to make the third-party lessors more comfortable with our products," HDS vice-president and treasurer David Robertson told *Computerworld*. "And to do that, we have to bring out our policies regarding reconfiguration of equipment, maintenance and reconfiguration."

HDS, the \$1 billion mainframe firm owned by Hitachi Ltd. and General Motors Corp.'s Electronic Data Systems (EDS), leases nearly half of its IBM-compatible computers through its HDS Credit Corp. subsidiary. But the leases are generally written based on financing from a "silent partner," such as an insurance company.

In the future, HDS would like to see more leases written by third parties such as Comdisco, Inc. in Rosemont, Ill., which leases IBM and AMD-

Corp. computers, HDS executives said. This would make it easier for customers to arrange financial alternatives to outright purchases and would also serve



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DAVID ROBERTSON  
HITACHI DATA SYSTEMS

to expand the market for HDS systems if third-party companies aggressively market them.

The HDS moves to gain acceptance with independent lessors do not rule out the possibility that some leases will be underwritten by corporate parent Hitachi Ltd., Rosemont, Ill. In recent weeks, HDS executives have been meeting with members of the Computer Dealers and Lessors Association (CDLA), industry analysts and customers in an attempt to explain their revised leasing strategy, Robertson said.

Among the action items on HDS' new leasing agenda are the following:

- To be accepted as a member of the CDLA. HDS has already applied for CDLA membership.
- HDS will publish documents on how to do with HDS business practices within two weeks and on its reconfiguration policies within two months.
- HDS is currently recruiting sales personnel for its wholly owned leasing subsidiary.

"It used to be very difficult to market," HDS says. "Now, we can't see Kenneth Postle, president of Comdisco. "You had no cooperation, but that appears to

be changing. They're doing what they have to do to gain acceptance."

Postlates said that HDS disk drives are popular with customers but confirmed that relatively few processors from HDS (formerly National Advanced Systems) had been leased by CDLA firms in recent years. "NAS was seen as a small company, without the critical mass in the marketplace, and I don't think you found lessors being proactive in financing NAS equipment," he said.

Until now, potential third-party lessors have been wary of the downside risks involved in leasing HDS machines, and few leased HDS gear unless customers demanded it as part of a larger deal.

"It's a structural issue that has to do with HDS business practices," said Mark Hess, director of IBM large systems research at Gartner Group, Inc. in Stamford, Conn. "Someone has to be willing to break those machines apart and to reconfigure them." Hess says that a willing to recently a leased machine for maintenance, then the residual values would go up."

## IBM hikes some — not all — prices

When it comes to price hikes, IBM seems to back into things. Last week, the company announced another across-the-board increase that appears to exclude more products than it includes.

The pricing action — this time at 4% — is the latest in a series during the last two years. IBM typically announces these hikes with a list of excluded items only.

Products excluded are ES/3090s, Personal System/2s, OS/2, DOS, 3860 disk drives, memory for the RISC System/6000 and various maintenance services.

Also excluded are products announced or products that had price changes after June 1, 1990. This would include such products as the newest Application System/400 models.

Going from that list, the price hike will affect such systems as the ES/200s and 4381s, according to an IBM spokesman. It would also include mainframe operating systems and DB2.



# Users anticipate 3090 bargains

Assume Summit will pave way for great deals on used IBM mainframes

BY ELLIS BOOKER  
and NELL MARGOLIS  
OF STAFF

Computer leasing firms lining up to reap the spoils of Summit might have to climb over their customers. Users not necessarily in the market for the new mainframes are nonetheless looking forward to the IBM announcement, anticipating that it will release a flood of used mainframes into the market at unbeatable prices.

Darrell Ford, data center director at Southwest Community Health Services in Albuquerque, N.M., said he will play leasing

companies off one another when the contract for his 3081 is up next year.

Ford's company has leased through Schaumburg, Ill.-based independent leasing market leader Cordisco, Inc. for the past 12 years. "This kind of a thing in the leasing life of my machine is perfect," he said.

Edward Smith, vice-president of data processing at Uita National Insurance Group in New Hartford, N.Y., has already factored the Summit announcement into his upgrade strategy. Uita National recently upgraded from 3090 183; with growing room left for it within the 3090

series, the firm will not jump to Summit, according to Smith.

"I would expect when Summit comes out, it will be over our heads," said Smith, who nevertheless hopes to be in a good position to upgrade at the end of next year. "By that time, we're going to have a couple of things going to happen. Used boxes will be available, and IBM will be at the end of its fiscal year and be more willing to deal."

At Champion International Corp., a Fortune 100 paper company in Stamford, Conn., MIS network services director Thomas Walsh said he sees the advent of Summit as the opening

of hunting season for new deals. Champion currently uses an IBM 3090 600E, leased. But July through IBM's captive leasing company, IBM Credit Corp. That lease runs until 1992; Walsh said he foresees no major systems upgrade until then.

"But we do expect to be very well-positioned in '92, because at that time, we'll have a lot of options, including used [3090] 600As," he added.

Walsh said he looks forward to wide-open options for systems and leasing arrangements. "I inherited the previous deal with IBM Credit Corp.," he said, noting that this will be subject to negotiation in 1992.

Users reish the prospect of picking and choosing among bottom-dollar deals on used 3090s. Lessors are looking forward to a shot in their marketing arms

(see story page 1).

But which side is unilaterally relying on Summit to deliver more of a bonanza than is likely? Possibly both — but probably neither, analysts said.

After months of guessing and sitting tight on their budgets, information systems buyers will now have before them new mainframe offerings from IBM and high-end competitors Hitachi Data Systems Corp. and Amdahl Corp.

Within these suddenly flexible parameters, analysts said, it is unlikely that any one extreme scenario will prevail. For instance, several speculated, it is probable that enough users will dump 3090s to depress the price — but not so many that the shaved profit per box will not be compensated for by the number of deals going down.

## This time, it's a whole different ball game for IBM

### ANALYSIS

BY ROSEMARY HAMILTON  
OF STAFF

When IBM introduced the 3090 in 1985, customers were given no upgrade options from the previous generation, modest performance improvements with the initial new system and a two-year wait for the true 3090 raw performance improvement.

If there was an outcry from users, it was not very loud. But IBM cannot afford to take that same path today.

On Wednesday, when it presents its new mainframe generation, which sources are calling the ES/9000, IBM will face a market radically different from five years ago.

Put simply, the game is not about mainframes anymore. It is about selling good computing performance at a decent price. If IBM cannot offer that, users seem willing to look elsewhere.

"Why worship at any altar?" asked Tom Loeane, information systems chief at Albano Rent A Car, Inc. in Fort Lauderdale, Fla. "Is there something sacred about mainframes?"

Other users and analysts contacted last week suggested that IBM has to prove that its new generation is not the latest in mainframe computing but a

better deal than other large-scale computing options.

Workstations, personal computer local-area networks and other small systems pose perhaps the biggest challenge for IBM, users said.

"My applications are going on the smallest computer that I can put them on," said Frank Erickson, IS director at United Parcel Service of America, Inc. Erickson is still a dedicated mainframe user, but like many IS directors, he is adjusting his computing requirements to systems that make the most sense.

IBM is already trying to com-

bat this type of approach with its new mainframe strategy, not lined earlier this summer. In short, it calls for a new mainframe that will serve as an over-seer to an environment made up of smaller systems. By positioning the mainframe as the nerve center, IBM is saying that users should not select smaller systems in place of mainframes. Instead, IBM says mainframes will play a different but critical role in this new environment.

Most observers agree with this — to a point. While they say customers will need systems to oversee multiple smaller sys-

tems, they also say the oversee system does not necessarily have to be a mainframe. And certainly does not have to be a system in the multimillion-dollar price bracket in which traditional mainframes have long been.

As a result, IBM needs to find a price point that is aggressive enough to make the new system a good deal. At the same time, however, IBM cannot let profit margins suffer or threaten its own margin sales.

On the large-system front, IBM is faced with far more serious competition than when it comes to traditional mainframe rivals, Amdahl Corp. and Hitachi Data Systems Corp. Increasingly, users are committing to large systems vendors not because of the deal they offer.

Also, IBM no longer has the

luxury of long lead times in delivering product ahead of the plug-compatible manufacturers (PCMs). Hitachi was ahead of IBM in introducing more powerful mainframes this year. And most industry observers expect that IBM will begin delivering the true power of so-called Summit in late 1991, which puts it on an even footing with Hitachi.

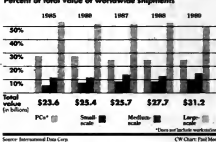
Observers said they expect IBM to use two strategies in facing this challenge. First, it will play up its newest release of MVS/ESA and claim a functional advantage over the PCMs until they achieve compatibility with it. Second, they will focus on the use of two vectors, pointing to its concepts of dedicated processors and system clusters, to further differentiate itself from Amdahl and Hitachi.

Users in particular expressed faith that IBM can take on the formidable task. "Good competitive brings out the best in everyone," Loeane said.

### High sales

While showing a slight decline over the life of the 3090 generation, large-scale hardware sales still account for half of IBM's equipment revenue

Percent of total value of worldwide shipments



## Fujitsu expands product line, supercomputer war heats up

NEW YORK — Fujitsu Ltd. last week announced a Unix-based operating system optimized for use with its supercomputers and extended its VP2000 family with the addition of two new supercomputers. These include a four-processor, two-vector-processor system.

The UX/PM operating system is based on AT&T Unix System Release 4 and is designed to run on the company's VP 2000 and M series of mainframe machines. It is expected to be available in April 1991.

In general, Japanese supercomputers are not widely used in the U.S. According to Jeff Cantin, an independent marketing consultant based in San Francisco, the most significant impact of

the operating system announcement will be felt in Japan, where it "can be leveraged as a block against NEC in the international supercomputing competition."

According to Fujitsu, the new supercomputing machines, the VP2400/40 and the VP2200/40, are a response to increased user demands for large-scale processing involving simulations. They offer a maximum peak of 8.5 billion floating-point operations per second (GFLOPS) and 2 GFLOPS, respectively.

Deliveries are scheduled to begin this month, and rental fees (in thousands of yen) range from about 79,000 to 163,000 per month.

SALLY CUSACK

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## TRENDS



The reigning perception is that ISDN adoption will decrease costs. However, almost half of the respondents either expect an increase or are totally in the dark as to what will happen.

## With ISDN, how do you feel costs will be affected?

	Increase	No change	Decrease	Don't know
Long-distance service	30	11	38	21
Local phone service	28	26	28	18
Data communications	25	8	49	18
Average response	28	15	38	19

Number of respondents (Base: 300)

88% of those surveyed believe Basic Rate Interface lines are more expensive than they actually are.

## What price do you think Bell operating companies charge for ISDN Basic Rate Interface service?



Actual cost is \$19.50 (Illinois Bell)  
Percent of respondents (Base: 100)

One reason for the lack of knowledge is that users are not being approached by vendors' sales forces.

## Have you been asked to purchase ISDN equipment or services?



Percent of respondents (Base: 100)

Source: International Data Corp., Framingham, Mass.

CW Chart Services Dept.

## NEXT WEEK

Talk about lean and mean. With help from just two systems analysts, Ken Krallman is the entire information systems department at Carleton Technologies, a \$35 million manufacturer of spacecraft life support equipment in Orchard Park, N.Y. Find out how Krallman shoulders this responsibility in a Manager's Journal profile.



Ken Krallman

Information systems personnel are more than happy with their calling, but they say they are troubled by the way other businesspeople — senior managers and computer users alike — fail to understand and appreciate what IS does. That's a major theme that runs through *Computerworld's* fourth annual job satisfaction survey.

## INSIDE LINES

## The foreign legion

Chaos Computer Club, West Germany's most active hacker group, is lining up members in the U.S., according to a hacker we know who is no slouch when it comes to illegal electronic break-ins. Members of the group were targets of the investigation that was the subject of *The Cuckoo's Egg*, Clifford Stoll's account of hackers-turned-spies for the KGB.

## Whatever happened to . . .

Robert T. Morris, convicted in March of turning a worm loose on Internet, will file an appeal next week to overturn his felony conviction, according to Thomas Guidoboni, his attorney. The filing of the appeal has been delayed because the entire transcript of the trial, amounting to 1,300 pages, was not available until two weeks ago, Guidoboni said.

## What to do about it all

Two bills wending through the U.S. House of Representatives would have made it a felony to unleash a computer virus, but both have died as a result of a jurisdictional turf war between the subcommittees on crime and criminal justice, according to a source. Key members of the subcommittee on crime — which typically handles bills related to malicious conduct such as the unleashing of viruses — were miffed that the rival subcommittee was doing the groundwork on the two virus bills. To assert its jurisdictional claim, the subcommittee on crime added a provision that makes losing a virus a misdemeanor into the Comprehensive Crime Control Act of 1990. That leaves one bill in the Senate specifically aimed at applying stiffer penalties.

## The ink looked Blue

An unattributed advertisement in the *Wall Street Journal* Friday portrayed a partially completed letter with an obscured letterhead from the company to IBM. The customer tells IBM that he wishes all his equipment worked together and says, "Workstation, mainframes, I don't care what you call them — we'll grow faster if they work together." It would seem to be a promotional blurb for this week's sweeping Summit — do we still call it a mainframe? — announcement.

## Can they get it together?

Talk of a joint support group for Wordperfect, Novell and Lotus refuses to die. Novell users said last week that negotiations continue on such an alliance, which was first floated, then quickly rebuffed, when Lotus and Novell announced their ill-fated merger plan.

## But what's the price?

Borland rolls out the newest version of its 5-year-old Paradox database application Wednesday with an upgrade that will add IBM, Microsoft and Oracle connectivity. DEC RDB/VMS connections should arrive by the end of the year. The Scotts Valley, Calif.-based firm is expected to use Paradox to side-sweep an off-kilter Ashton-Tate, which finally got Dbase IV Version 1.1 out the door, nearly two years after the introduction of a bug-plagued Version 1.0.

## In the RISC-y business

When the IBM RISC System/6000 was introduced, SPSS, Inc. was one of the chosen business partners for developing applications software for the machine and one of its bigger cheerleaders. All has not been hunky-dory since, though, as SPSS has had fits while using the RS/6000 as a development tool. The company won't say what the bugs are, just that things are getting better.

The nation's leading philosophers on the role of computers in society gather in Washington, D.C., next week for a conference on "Computers and the Quality of Life." *Keynote speaker Ben Shneiderman of the University of Maryland is expected to call on IS designers and managers to prepare a social impact statement at the start of every "human-computer interaction project" to assess human requirements and possible adverse effects of the system. Do we need a Systems Pollution Agency? You tell us. Call News Editor Pete Bartolok at (800) 343-6474, fax your views to (508) 875-8581 or message us on MCI Mail at COMPUTERWORLD.*

# Many businesses are already getting a competitive edge with AT&T ISDN.

## Maybe even your competition.

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### ***AT&T ISDN is working in Telemarketing:***



Even before a telemarketer answers the phone, all account information about the caller can appear on-screen. Telemarketing companies are now giving immedi-

ate answers to their customers' questions. So orders get processed faster, sales opportunities are greater. And customers aren't left on hold listening to music.

### ***AT&T ISDN is working in Transportation:***



With AT&T ISDN's Call-by-Call feature, transportation companies are now centralizing control of their dispatch operations and combining various AT&T switched services on the same T1 pipe. This flexibility means that more calls are being handled with fewer access lines. AT&T ISDN has helped transportation companies save thousands of dollars each month and has moved their businesses into the fast lane.

### ***AT&T ISDN is working in Lodging:***



Right now, when their switchboards

are all lit up, hotels are using AT&T ISDN to route calls automatically to the next available agent, even if they're in another location. That maximizes their staffing efficiency. Also, with our automatic number identification feature, agents have become more accurate and are saving time, opening the door for more personalized service.

So now that you know how well it's working for your competition, let the advanced technology of AT&T ISDN increase productivity and save money for your business today.

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